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RESULTS OF TESTS IN THE NASA/LaRC 31-INCH CFHT  
ON AN 0.010-SCALE MODEL (32-OT)  
OF THE SPACE SHUTTLE CONFIGURATION 3  
TO DETERMINE THE RCS JET FLOWFIELD INTERACTION EFFECTS  
ON AERODYNAMIC CHARACTERISTICS (IA60/OA105)  
VOLUME 2 OF 2

By

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Prepared under NASA Contract Number NAS9-13247

By

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for

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National Aeronautics and Space Administration  
Houston, Texas

WIND TUNNEL TEST SPECIFICS:

Test Number: LaRC 31-inch CFHT-108 and 109  
NASA Series Number: IA60/OA105  
Model Number: 32-OT  
Test Dates: IA60: 14 through 20 Feb. 1974  
OA105: 20 through 22 February 1974

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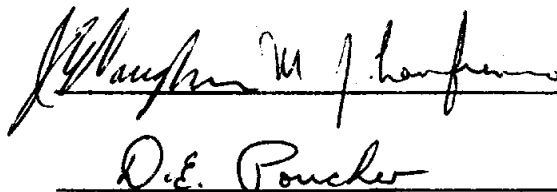
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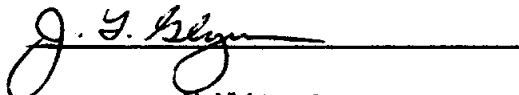
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ABSTRACT

Tests were conducted in the NASA Langley Research Center 31-inch continuous Flow Hypersonic Wind Tunnel from 14 February to 22 February 1974, to determine RCS jet interaction effect on the hypersonic aerodynamic and stability and control characteristics prior to RTLS abort separation. The model used was an 0.010-scale replica of the Space Shuttle Vehicle Configuration 3. Hypersonic stability data were obtained from tests at Mach 10.3 and dynamic pressure of 150 psf for the integrated Orbiter and external tank and the Orbiter alone. RCS modes of pitch, yaw, and roll at free flight dynamic pressure simulation of 7, 20, and 50 psf were investigated. The effects of speedbrake, bodyflap, elevon, and aileron deflections were also investigated.

This report is published in two volumes. Volume 1 contains data from test IA60 and Volume 2 contains OA105 data.

Volume 2 utilizes selected data from test OA85 (LaRC CHFT 101) in both plotted and tabulated form. Test OA85 is completely documented in DMS-DR-2113.

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### SCHEDULE OF COEFFICIENTS PLOTTED:

- (A) KND, KLMD, DCN, DCLM, CN, CLM versus ALPHA
- (B) KNU, KLMU, KBLU, KM,BLU, KYN,LU, DCN, DCLM, DCBL,  
DCYN, CN, CLM, CBL, CYN versus ALPHA
- (C) KBLU/D, KM,BL2, KYN,L2, DCBL, DCLM, DCYN, CBL, CLM  
CYN versus ALPHA
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CYN versus ALPHA

NOMENCLATURE  
General

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
a		speed of sound; m/sec, ft/sec
C <sub>p</sub>	CP	pressure coefficient; $(p_1 - p_\infty)/q$
M	MACH	Mach number; $V/a$
p		pressure; N/m <sup>2</sup> , psf
q	Q(NSM) Q(PSF)	dynamic pressure; $1/2\rho V^2$ , N/m <sup>2</sup> , psf
RN/L	RN/L	unit Reynolds number; per m, per ft
V		velocity; m/sec, ft/sec
$\alpha$	ALPHA	angle of attack, degrees
$\beta$	BETA	angle of sideslip, degrees
$\psi$	PSI	angle of yaw, degrees
$\phi$	PHI	angle of roll, degrees
$\rho$		mass density; kg/m <sup>3</sup> , slugs/ft <sup>3</sup>

Reference & C.G. Definitions

Ab		base area; m <sup>2</sup> , ft <sup>2</sup>
b	BREF	wing span or reference span; m, ft
c.g.		center of gravity
$\frac{l_{REF}}{c}$	LREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing area or reference area; m <sup>2</sup> , ft <sup>2</sup>
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis

SUBSCRIPTS

b	base
l	local
s	static conditions
t	total conditions
$\infty$	free stream

# NOMENCLATURE (Continued)

## Body-Axis System

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$C_N$	CN	normal-force coefficient; $\frac{\text{normal force}}{qS}$
$C_A$	CA	axial-force coefficient; $\frac{\text{axial force}}{qS}$
$C_Y$	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
$C_{A_b}$	CAB	base-force coefficient; $\frac{\text{base force}}{qS}$ $-A_b(p_b - p_\infty)/qS$
$C_{A_f}$	CAF	forebody axial force coefficient, $C_A - C_{A_b}$
$C_m$	CIM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
$C_n$	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
$C_l$	CBL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$

## Stability-Axis System

$C_L$	CL	lift coefficient; $\frac{\text{lift}}{qS}$
$C_D$	CD	drag coefficient; $\frac{\text{drag}}{qS}$
$C_{D_b}$	CDB	base-drag coefficient; $\frac{\text{base drag}}{qS}$
$C_{D_f}$	CDF	forebody drag coefficient; $C_D - C_{D_b}$
$C_Y$	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
$C_m$	CIM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
$C_n$	CIN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
$C_l$	CSL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$
$L/D$	L/D	lift-to-drag ratio; $C_L/C_D$
$L/D_f$	L/DF	lift to forebody drag ratio; $C_L/C_{D_f}$

# NOMENCLATURE (Continued)

<u>Symbol</u>	<u>SADSAC Symbol</u>	<u>Definition</u>
$\Delta C_A$	DCA	incremental axial-force Coefficient
$\Delta C_\ell$	DCBL	incremental rolling-moment coefficient
$\Delta C_m$	DCLM	incremental pitching-moment coefficient
$\Delta C_N$	DCN	incremental normal-force coefficient
$\Delta C_n$	DCYN	incremental yawing-moment coefficient
$\Delta C_Y$	DCY	incremental side-force coefficient
$K_{\ell_{u/D}}$	KBLU/D	amplification factor on rolling moment due to up and down firing coupled jets = $(\Delta C_\ell / C_{\ell_{JU/D}}) + 1$
$K_{\ell_D}$	KBLD	amplification factor on rolling moment due to down firing jets = $(\Delta C_\ell / C_{\ell_{JD}}) + 1$
$K_{\ell_u}$	KBLU	amplification factor on rolling moment due to up firing jets = $(\Delta C_\ell / C_{\ell_{JU}}) + 1$
$K_{\ell,n}$	KBL,YN	cross-coupling factor on rolling moment due to yaw jets = $\Delta C_\ell /  C_{\ell_{JU/D}} $
$K_{m_D}$	KLMD	amplification factor on pitching moment due to down firing jets = $(\Delta C_m / C_{m_{JD}}) + 1$
$K_{m_u}$	KLMU	amplification factor on pitching moment due to up firing jets = $(\Delta C_m / C_{m_{JU}}) + 1$
$K_{m,\ell_{u/D}}$	KM,BL2	cross-coupling factor on pitching moment due to up and down firing coupled roll jets = $\Delta C_m /  C_{m_{JD}} $
$K_{m,\ell_D}$	KM,BLD	cross-coupling factor on pitching moment due to down firing roll jets = $\Delta C_m / \frac{1}{2}  C_{m_{JD}} $
$K_{m,\ell_u}$	KM,BLU	cross-coupling factor on pitching moment due to up firing roll jets = $\Delta C_m / \frac{1}{2}  C_{m_{JU}} $
$K_{m,n}$	KM,YN	cross-coupling factor on pitching moment due to yaw jets = $\Delta C_m /  C_{m_{JD}} $



# NOMENCLATURE (Concluded)

$K_{N_D}$	KND	amplification factor on normal force due to down firing jet = $(\Delta C_N / C_{N_{JD}}) + 1$
$K_{N_u}$	KNU	amplification factor on normal force due to up firing jet = $(\Delta C_N / C_{N_{JU}}) + 1$
$K_{n, \ell_{u/D}}$	KYN, L2	cross-coupling factor on yawing moment due to up and down firing coupled roll jets = $\Delta C_n /  C_{n_{JS}} $
$K_{n, \ell_D}$	KYN, LD	cross-coupling factor on yawing moment due to down firing roll jets = $\Delta C_n / \frac{1}{2}  C_{n_{JS}} $
$K_{n, \ell_u}$	KYN, LU	cross-coupling factor on yawing moment due to up firing roll jets = $\Delta C_n / \frac{1}{2}  C_{n_{JS}} $
$K_n$	KYN	amplification factor on yawing moment = $(\Delta C_n / C_{n_{JS}}) + 1$
$K_Y$	KY	amplification factor on side force = $(\Delta C_Y / C_{Y_{JS}}) + 1$
RCS		reaction control system
RTLS		return to launch site
$\delta_a$	AILRON	aileron deflection angle, degrees
$\delta_e$	ELEVON	elevon deflection angle, degrees
$\delta_f$	BDFLAP	body flap deflection angle, degrees
$\delta_R$	RUDDER	rudder deflection angle, degrees
$\delta_{SB}$	SPDBRK	speed brake deflection angle, degrees
$P_c$	PC RCS	model RCS air supply system plenum chamber pressure, psi
	Q-SIM	free stream dynamic pressure for a simulated flight condition, psf

## CONFIGURATIONS INVESTIGATED

Two configurations were tested. These were the second stage ascent configuration consisting of Orbiter with External Tank attached, and the RTLS configuration (Orbiter alone). The model used for this test was an 0.010-scale replica of Configuration 3 of the Space Shuttle Orbiter and External Tank.

For convenience the configuration nomenclature was abbreviated as follows: The symbols are defined in the Model Dimensional Data.

$$O = B_{19} C_7 E_{23} F_5 M_6 N_{39} R_5 V_7 W_{107}$$

$$OT = B_{19} C_7 E_{23} F_5 M_6 N_{39} R_5 V_7 W_{107} T_{10}$$

$T_{10}$  included the attach structure and protruberances  $FL_7$ ,  $FL_8$ ,  $PT_{16}$ ,  $PT_{17}$ ,  $PT_{18}$ ,  $AT_{21}$ ,  $AT_{22}$ , and  $AT_{23}$ .

Control surface effectiveness was investigated with elevon deflections of  $+15^\circ$  and  $-20^\circ$ , aileron deflections of  $+5^\circ$ ,  $+10^\circ$ ,  $+15^\circ$ , and  $-15^\circ$ , rudder deflections of  $+20^\circ$ , bodyflap deflections of  $+13.75^\circ$  and  $-14.25^\circ$ , and a speedbrake deflection of  $55^\circ$ .

## INSTRUMENTATION

The LaRC 0.75-inch six-component 2019C internal balance was used for this test program.

No model base pressures or balance chamber pressures were measured during this test. The RCS supply pressure was set and monitored at the plenum chambers between the two RCS nozzle blocks.

## TEST FACILITY DESCRIPTION

The Mach 10 nozzle of the Langley Continuous Flow Hypersonic Tunnel is designed to operate at stagnation pressures of 15 to 150 atmospheres at temperatures up to 1960°R. Air is preheated electrically by passing through a multi-tube heater. The nozzle has a 31-inch square test section which incorporates a moveable second minimum. Continuous operation is achieved by passing the air through a series of compressors. Additional information on this facility is given in NASA TM X-1130 entitled, "Characteristics of Major Active Wind Tunnels at the Langley Research Center", by William T. Schaefer, Jr.

## DATA REDUCTION

Aerodynamic forces and moments were reduced to coefficient form using the following reference dimensions:

Reference area ( $S$ ) =  $0.269 \text{ ft}^2$  ( $38.736 \text{ in}^2$ )

Reference Lengths

$\bar{c} = 4.748 \text{ in}$  ( $C_m$ )

$b = 9.367 \text{ in}$  ( $C_m, C_\ell$ )

$L_{\text{REF}} = 12.90 \text{ in}$  ( $X_{\text{c.p.}}$ )

The moments were reduced about a moment reference center located as follows:

Orbiter Only

Orbiter station 10.767 at  $Y_o = 0.00$  and  $Z_o = 3.75$

Integrated Vehicle

$X_T = \text{ET station } 17.258$  (7.368 inches aft of orbiter nose)

$Y_T = 0.00$

$Z_T = 6.336$  (.994 inches below orbiter FRL)

Standard LaRC data reduction techniques were used for reducing the data to coefficient form.

TABLE I.

[illegible]



TABLE II - Continued

RCS ON

TEST: IA60		DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: 2-20-74						
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		CONTROL DEFLECTION				NO. OF RUNS	MACH NUMBERS ( OR ALTERNATE INDEPENDENT VARIABLE )									
		$\alpha$	$\beta$	$q_{00}$	$P_c$	$\delta_e$	$\delta_a$		$\delta_{bf}$	$\delta_{sb}$	RUN NO.							
RH) 01N	OT NS1	A	0	150	179	15	0		0	0	4							
02N	OT NS1	A	0	150	504	15	0		0	0	5							
03N	OT N49NSD	A	0	150	167	15	0		0	0	6							
04N	OT N49NSD	A	0	150	469	15	0		0	0	7							
05N	OT N49NS2	A	0	150	158	15	0		0	0	8							
06N	OT N49NS2	A	0	150	446	15	0		0	0	9							
07N	OT NS2	A	0	150	158	15	0		0	0	10							
08N	OT NS2	A	0	150	446	15	0		0	0	11							
09N	OT NS2	A	0	150	158	0	0		0	0	23							
10N	OT NS2	A	0	150	446	0	0		0	0	24							
11N	OT N49NS2	A	0	150	158	0	0		0	0	20							
12N	OT N49NS2	A	0	150	446	0	0		0	0	21							
13N	OT N49	A	0	150	158	0	0		0	0	26							
14N	OT N49	A	0	150	446	0	0		0	0	27							
15N	OT NS1	A	0	150	179	0	0		0	0	28							
16N	OT NS1	A	0	150	504	0	0		0	0	29							
17N	OT NS1	A	0	150	179	-20	0		0	0	31							
18N	OT NS1	A	0	150	504	-20	0		0	0	32							
19N	OT N49NSD	A	0	150	167	-20	0		0	0	34							
20N	OT N49NSD	A	0	150	469	-20	0		0	0	35							

$\alpha$  OR  $\beta$

SCHEDULES

At  $-10^\circ$  to  $+60^\circ$  in  $5^\circ$  INCREMENTS

$\alpha$  OR  $\beta$   
SCHEDULES

A -  $-10^\circ$  TO  $+60^\circ$  IN  $5^\circ$  INCREMENTS

TEST RUN NUMBERS



TABLE II - Continued

RCS ON

TEST: 1A60		DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: 2-20-84						
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		CONTROL DEFLECTION				NO. OF RUNS	MACH NUMBERS ( OR ALTERNATE INDEPENDENT VARIABLE )									
		$\alpha$	$\beta$	$\delta_{\alpha}$	$P_c$	$\delta_e$	$\delta_a$		$\delta_{bt}$	$\delta_{sb}$	RUN NO.							
RH1 21N	OTN49	A	0	150	158	-20	0		0	0	36							
22N	OTN49	A	0	150	446	-20	0		0	0	37							
23N	OTN49NS2	A	0	150	158	-20	0		0	0	38							
24N	OTN49NS2	A	0	150	446	-20	0		0	0	39							
25N	OTNS2	A	0	150	158	-20	0		0	0	40							
26N	OTNS2	A	0	150	446	-20	0		0	0	41							
27N	OTN49NS2	A	0	150	158	0	0		0	55	43							
28N	OTN49NS2	A	0	150	446	0	0		0	55	44							
29N	OTNS2	A	0	150	158	0	0		0	55	45							
30N	OTNS2	A	0	150	446	0	0		0	55	46							
31N	OTN49NS2	A	0	150	158	0	-15L +15R		0	0	48							
32N	OTN49NS2	A	0	150	446	0	-15L +15R		0	0	49							
33N	OTN49NS2	A	0	150	158	0	+5L -5R		0	0	51							
34N	OTN49NS2	A	0	150	446	0	+5L -5R		0	0	52							
35N	OTN49NS2	A	0	150	158	-20	+10L -10R		0	0	54							
36N	OTN49NS2	A	0	150	446	-20	+10L -10R		0	0	55							
37N	OTN49NS2	A	0	150	158	0	+5L -5R		0	0	13							
38N	OTN49NS2	A	0	150	446	0					14							
39N	OTN49NS0	A	0	150	167	0					15							
40N	OTN49NS0	A	0	150	469	0	V		V	V	17							
$\alpha$ OR $\beta$ _____ SCHEDULES _____																		

TEST RUN NUMBERS

RCS ON

[illegible]

RCS OFF

## DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: 2/21/74

[illegible]

TABLE II - Continued

RCS ON

TEST: 0A10S		DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: 2/21/74						
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		CONTROL DEFLECTION				NO. OF RUNS	MACH NUMBERS ( OR ALTERNATE INDEPENDENT VARIABLE )									
		$\alpha$	$\beta$	$q_{\infty}$	$P_c$	$S_e$	$S_a$		$S_{bf}$	$S_{sb}$	$S_r$	RUN NO.						
RH201N	0 NS1	A	0	150	72	0	0		13.75	55	0	4						
02N	0 NS1	A	0	150	179	0	0		13.75	55	0	5						
03N	0 NS1	A	0	150	504	0	0		13.75	55	0	6						
04N	0 N49NS2	A	0	150	62	0	0		13.75	55	0	7						
05N	0 N49NS2	A	0	150	158	0	0		13.75	55	0	8						
06N	0 N49NS2	A	0	150	446	0	0		13.75	55	0	9						
07N	0 N49	A	0	150	62	0	0		13.75	55	0	10						
08N	0 N49	A	0	150	158	0	0		13.75	55	0	11						
09N	0 N49	A	0	150	446	0	0		13.75	55	0	12						
10N	0 NS2	A	0	150	62	0	0		13.75	55	0	13						
11N	0 NS2	A	0	150	158	0	0		13.75	55	0	14						
12N	0 NS2	A	0	150	446	0	0		13.75	55	0	15						
13N	0 NS2	A	0	150	158	0	0		-14.25	55	0	17						
14N	0 NS2	A	0	150	446	0	0		-14.25	55	0	18						
15N	0 N49	A	0	150	158	0	0		-14.25	55	0	19						
16N	0 N49	A	0	150	446	0	0		-14.25	55	0	20						
17N	0 N49NS2	A	0	150	158	0	0		-14.25	55	0	21						
18N	0 N49NS2	A	0	150	446	0	0		-14.25	55	0	22						
19N	0 NS1	A	0	150	179	0	0		-14.25	55	0	23						
20N	0 NS1	A	0	150	504	0	0		-14.25	55	0	24						

$\alpha$  OR  $\beta$

SCHEDULES

$A = -10^{\circ}$  TO  $+25^{\circ}$   $5^{\circ}$  INCREMENTS

$B = -5^{\circ}, -2^{\circ}, 0^{\circ}, +2^{\circ}, +5^{\circ}$

TEST RUN NUMBERS

$\alpha$  OR  $\beta$   
SCHEDULES

$A = -10^\circ$  TO  $+25^\circ$   $5^\circ$  INCREMENTS

$B = -5^\circ, -2^\circ, 0^\circ, +2^\circ, +5^\circ$

TEST RUN NUMBERS

TABLE II - Concluded

RCS ON

TEST: 0A105

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: 2/22

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		CONTROL DEFLECTION				NO. OF RUNS	MACH NUMBERS ( OR ALTERNATE INDEPENDENT VARIABLE )									
		$\alpha$	$\beta$	$q_{00}$	$P_c$	$\delta_e$	$\delta_a$		$\delta_{bf}$	$\delta_{sb}$	$\delta_r$	RUN NO.						
RH2 21N	0 N51	A	0	150	504	0	0		0	55	0	26						
22N	0 N49 N52	A	0	150	446	0	0		0	55	0	27						
23N	0 N49 N52	O	B	150	446	0	0		0	55	0	29						
24N	0 N49	A	0	150	446	0	0		0	55	0	30						
25N	0 N49	A	0	150	158	0	0		0	55	0	32						
26N	0 N52	A	0	150	446	0	0		0	55	0	33						
27N	0 N52	A	0	150	446	-20	0		0	55	0	35						
28N	0 N49	A	0	150	446	-20	0		0	55	0	36						
29N	0 N49 N52	A	0	150	446	-20	0		0	55	0	37						
30N	0 N51	A	0	150	504	-20	0		0	55	0	38						
31N	0 N49 N52	A	0	150	158	0	+15L -15R		0	55	0	40						
32N	0 N49 N52	A	0	150	158	0	-15L +15R		0	55	0	42						
33N	0 N49 N52	A	0	150	158	0	0		0	0	+20	44						
34N	0 N49 N52	A	0	150	158	0	0		0	0	-20	46						
35N	0 N51	25	0	150	C	0	0		0	55	0	50						
36N	0 N49 N50	25	0	150	C	0	0		0	55	0	49						
37N	0 N49 N50	25	0	75	C	0	0		0	55	0	48						
38N	0 N51	25	0	75	C	0	0		0	55	0	47						

TEST RUN NUMBERS

$\alpha$  OR  $\beta$   
SCHEDULES

A = -10° TO +25° IN 5° INCREMENTS  
B = -5°, -2°, 0°, +2°, +5°

$P_c$   
C = 0, 100, 200, 300, 400, 500 pps

$\alpha$  OR  $\beta$   
SCHEDULES

A =  $-10^\circ$  TO  $+25^\circ$  IN  $5^\circ$  INCREMENTS  
B =  $-5^\circ, -2^\circ, 0^\circ, +2^\circ, +5^\circ$

$P_c =$   
C = 0, 100, 200, 300, 400, 500 per

TEST RUN NUMBERS

TABLE III. - MODEL DIMENSIONAL DATA

MODEL COMPONENT: ATTACH STRUCTURE - AT<sub>21</sub>

GENERAL DESCRIPTION: Attach structure, same as AT<sub>11</sub> except only the  
forward attach structure.

MODEL SCALE: 0.010

DRAWING NO.: VL72-000089

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Orbiter to Tank		
Location- In.		
X <sub>T</sub>	<u>382.000</u>	<u>3.820</u>
X <sub>T</sub>	<u>1133.000</u>	<u>11.330</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: ATTACH STRUCTURE - AT<sub>22</sub>

GENERAL DESCRIPTION: Right rear, Orbiter to External Tank

MODEL SCALE: 0.010

DRAWING NO.: VL72-000088B + VL72-000089 NOTE: Use first drawing for location and second drawing for detail of struts

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
First strut		
Diameter - In. (Approx.)	<u>8.0</u>	<u>0.08</u>
Aft Location, In. (Attach to Orbiter)		
X <sub>O</sub>	<u>1307.0</u>	<u>13.070</u>
X <sub>T</sub>	<u>2058.0</u>	<u>20.580</u>
Fwd Location - In. (Approx.) (Attach to Orbiter)		
X <sub>O</sub>	<u>1108.0</u>	<u>11.080</u>
X <sub>T</sub>	<u>1859</u>	<u>18.59</u>
NOTE: This strut is the mirror image strut AT <sub>23</sub>		
Second Strut		
Diameter, In. (Approx.)	<u>8.0</u>	<u>0.08</u>
Location - In.		
X <sub>O</sub>	<u>1307.0</u>	<u>13.070</u>
X <sub>T</sub>	<u>2058</u>	<u>20.580</u>
NOTE: This is a cross brace strut.		

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: ATTACH STRUCTURE - AT<sub>23</sub>

GENERAL DESCRIPTION: Left rear, Orbiter to External Tank

MODEL SCALE: 0.010

DRAWING NO.: VL72-000088B & VL72-000089

NOTE: Use first drawing for location  
and second drawing for detail  
of struts

DIMENSIONS:

	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Forward attach points:		
Orbiter to Tank		
No. of struts	<u>1</u>	<u>1</u>
Diameter - In. (Approx)	<u>8.0</u>	<u>0.08</u>
Location - In.		
$X_O$	<u>1307</u>	<u>13.070</u>
$X_T$	<u>2058</u>	<u>20.580</u>
Aft attach points:		
Location - In. (Approx.)		
$X_O$	<u>1108</u>	<u>11.080</u>
$X_T$	<u>1859</u>	<u>18.590</u>



TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT : BODY - B<sub>19</sub>

GENERAL DESCRIPTION : Fuselage, Configuration 3 per Rockwell  
Lines VL70-000139B.

NOTE: Identical to B<sub>17</sub> except forebody.

MODEL SCALE: 0.010

DRAWING NUMBER : VL70-000139B

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length - In.	<u>1290.3</u>	<u>12.903</u>
Max Width - In.	<u>267.6</u>	<u>2.676</u>
Max Depth - In.	<u>244.5</u>	<u>2.445</u>
Fineness Ratio	<u>4.82175</u>	<u>4.82175</u>
Area - Ft <sup>2</sup>	<u></u>	<u></u>
Max. Cross-Sectional	<u>386.67</u>	<u>0.0387</u>
Planform	<u></u>	<u></u>
Wetted	<u></u>	<u></u>
Base	<u></u>	<u></u>

TABLE III. -MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT : CANOPY - C<sub>7</sub>  
 GENERAL DESCRIPTION : Configuration 3 per Rockwell Lines VL70-000139.

MODEL SCALE: 0.010

DRAWING NUMBER : VL70-000139

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length ( $X_0=433$ to $X_0=578$ ) In.F.S.	<u>145</u>	<u>1.450</u>
Max Width	<u>                    </u>	<u>                    </u>
Max Depth	<u>                    </u>	<u>                    </u>
Fineness Ratio	<u>                    </u>	<u>                    </u>
Area	<u>                    </u>	<u>                    </u>
Max. Cross-Sectional	<u>                    </u>	<u>                    </u>
Planform	<u>                    </u>	<u>                    </u>
Wetted	<u>                    </u>	<u>                    </u>
Base	<u>                    </u>	<u>                    </u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: ELEVON - E<sub>23</sub>GENERAL DESCRIPTION: Configuration 3 per W<sub>107</sub> Rockwell Lines DrawingVL70-000139B. Data for (1) of (2) sides.MODEL SCALE: 0.010DRAWING NUMBER: VL70-000139BDIMENSIONS:

	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft <sup>2</sup>	<u>205.52</u>	<u>0.0206</u>
Span (equivalent) - In.	<u>353.34</u>	<u>3.533</u>
Inb'd equivalent chord - In.	<u>114.78</u>	<u>1.148</u>
Outb'd equivalent chord - In.	<u>55.00</u>	<u>0.550</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.208</u>	<u>0.208</u>
At Outb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.00</u>	<u>0.00</u>
Trailing Edge	<u>10.24</u>	<u>10.24</u>
Hingeline	<u>0.00</u>	<u>0.00</u>
Area Moment (Normal to hinge line) - Ft <sup>3</sup>	<u>1548.07</u>	<u>0.00155</u>

TABLE III.- MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT : BODY FLAP- F<sub>5</sub>

GENERAL DESCRIPTION : 3 Configuration per Rockwell Lines VL70-000139

\_\_\_\_\_

\_\_\_\_\_

MODEL SCALE: 0.010

DRAWING NUMBER : VL70-000139

DIMENSIONS :

	FULL SCALE	MODEL SCALE
Length - In.	<u>84.70</u>	<u>0.847</u>
Max Width - In.	<u>267.6</u>	<u>2.676</u>
Max Depth	_____	_____
Fineness Ratio	_____	_____
Area - Ft <sup>2</sup>	_____	_____
Max. Cross-Sectional	_____	_____
Planform	<u>142.5</u>	<u>0.0143</u>
Wetted	_____	_____
Base	<u>38.0958</u>	<u>0.0038</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: FEEDLINE - FL-7

GENERAL DESCRIPTION: LOX feedline between ET and Orbiter

MODEL SCALE: 0.010

DRAWING NO.: VL78-000050

DIMENSIONS:

		<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Centerline at:	$X_T$	<u>2081.0</u>	<u>20.810</u>
	$Y_T$	<u>70.0</u>	<u>0.70</u>
	$X_O$	<u>1330.0</u>	<u>13.300</u>
	$Y_O$	<u>70.0</u>	<u>0.700</u>
Diameter		<u>18.5</u>	<u>0.185</u>

TABLE III. -- MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: FEEDLINE - FL<sub>8</sub>

GENERAL DESCRIPTION: LH<sub>2</sub> feedline between ET and Orbiter

MODEL SCALE: 0.010

DRAWING NUMBER: VL78-000050

DIMENSIONS:

		<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Centerline at:	X <sub>T</sub>	<u>2081.0</u>	<u>20.810</u>
	Y <sub>T</sub>	<u>- 70.0</u>	<u>- 0.700</u>
	X <sub>O</sub>	<u>1330.0</u>	<u>13.300</u>
	Y <sub>O</sub>	<u>- 70.0</u>	<u>- 0.700</u>
Diameter		<u>18.5</u>	<u>0.185</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT : OMS POD - M<sub>6</sub>

GENERAL DESCRIPTION : Basic configuration 3A OMS pods with non-  
metric RCS engine housing and nozzles. Same geometry as M<sub>4</sub>

MODEL SCALE: 0.010

DRAWING NUMBER : VL70-000139B

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length - In.	<u>346.0</u>	<u>3.460</u>
Max Width - In.	<u>108.0</u>	<u>1.080</u>
Max Depth - In.	<u>113.0</u>	<u>1.130</u>
Fineness Ratio	<u>          </u>	<u>          </u>
Area	<u>          </u>	<u>          </u>
Max. Cross-Sectional	<u>          </u>	<u>          </u>
Planform	<u>          </u>	<u>          </u>
Wetted	<u>          </u>	<u>          </u>
Base	<u>          </u>	<u>          </u>
Station of aft end of RCS nozzle block	<u>1560.0</u>	<u>15.600</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: MPS NOZZLES - N<sub>39</sub>GENERAL DESCRIPTION: Configuration 3A MPS NozzlesMODEL SCALE: 0.010

DRAWING NUMBER: \_\_\_\_\_

## DIMENSIONS:

	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
MACH NO.		
Length - In.		
Gimbal Point to Exit Plane		
Throat to Exit Plane		
Diameter - In.		
Exit	<u>94.000</u>	<u>0.940</u>
Throat		
Inlet		
Area - ft <sup>2</sup>		
Exit	<u>48.193</u>	<u>0.0048</u>
Throat		
Gimbal Point (Station) - In.		
Upper Nozzle		
X		
Y		
Z		
Lower Nozzles		
X	<u>1462.0</u>	<u>14.620</u>
Y	<u>53.000</u>	<u>0.530</u>
Z	<u>342.7</u>	<u>3.427</u>
Null Position - Deg.		
Upper Nozzle		
Pitch		
Yaw		
Lower Nozzle		
Pitch		
Yaw		



TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: RCS NOZZLE - N<sub>19</sub>GENERAL DESCRIPTION: RCS nozzle providing left-hand pitch-down control to simulate return to launch site (RTLS)

MODEL SCALE: 0.010

DRAWING NO.: SS-A01160-19

## DIMENSIONS:

	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Flight dynamic pressure simulation - PSF	<u>20</u>	<u>20</u>
Cant angle - Deg.		
Aft	<u>12</u>	<u>12</u>
Outboard	<u>20</u>	<u>20</u>
Diameter - In.		
Exit	<u>14.10</u>	<u>0.141</u>
Throat	<u>6.70</u>	<u>0.0670</u>
Area - In <sup>2</sup>		
Exit	<u>156.14</u>	<u>0.015614</u>
Throat	<u>35.25</u>	<u>0.003525</u>
Area ratio	<u>4.430</u>	<u>4.430</u>
No. of Nozzle	<u>2</u>	<u>2</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: RCS Nozzles - N<sub>50</sub>

GENERAL DESCRIPTION: RCS Nozzle providing right-hand pitch-down control  
to simulate return to launch site (RTL).

MODEL SCALE: 0.010

DRAWING NO.: SS-A01160-20

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Flight dynamic pressure simulation - PSF	<u>20</u>	<u>20</u>
Cant angle - deg.		
Aft	<u>12</u>	<u>12</u>
Outboard	<u>20</u>	<u>20</u>
Diameter - In.		
Exit	<u>14.10</u>	<u>0.141</u>
Throat	<u>6.70</u>	<u>0.0670</u>
Area - In. <sup>2</sup>		
Exit	<u>15.614</u>	<u>0.015614</u>
Throat	<u>35.25</u>	<u>0.003525</u>
Area Ratio	<u>4.430</u>	<u>4.430</u>
No. of Nozzles	<u>2</u>	<u>2</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: RCS NOZZLES - N<sub>51</sub>

GENERAL DESCRIPTION: RCS Nozzle providing left-hand yaw control to simulate return to launch site (RTLIS).

MODEL SCALE: 0.010

DRAWING NO.: SS-A01160-11

DIMENSIONS:

	<u>MODEL SCALE</u>
Flight dynamic pressure simulation- PSF	<u>20</u>
Cant angle - Deg.	
Aft	<u>0</u>
Outboard	<u>0</u>
Diameter - In.	
Exit	<u>0.141</u>
Throat	<u>0.0670</u>
Area - In. <sup>2</sup>	
Exit	<u>0.015614</u>
Throat	<u>0.003525</u>
Area ratio	<u>4.430</u>
No. of nozzles	<u>4</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: RCS NOZZLE - N<sub>52</sub>

GENERAL DESCRIPTION: RCS Nozzle providing right-hand pitch-up control to simulate return to launch site (RTLIS).

MODEL SCALE: 0.010

DRAWING NO.: SS-A01160-12

DIMENSIONS:

	<u>MODEL SCALE</u>
Flight dynamic pressure simulation - PSF	<u>20</u>
Cant angle- deg.	
Aft	<u>0</u>
Outboard	<u>0</u>
Diameter - In.	
Exit	<u>0.141</u>
Throat	<u>0.0670</u>
Area - In. <sup>2</sup>	
Exit	<u>0.015614</u>
Throat	<u>0.003525</u>
Area ratio	<u>4.430</u>
No. of nozzles	<u>2</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: ET PROTUBERANCE - PT<sub>16</sub>

GENERAL DESCRIPTION: LOX vent line fairing

MODEL SCALE: 0.010

DRAWING NO.: VL78-000031A

DIMENSIONS:

	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Leading edge at $X_T$	<u>322.0</u>	<u>3.210</u>
$Y_T$	<u>0.0</u>	<u>0.0</u>
Trailing edge at $X_T$	<u>955.0</u>	<u>9.55</u>
$Y_T$	<u>70.0</u>	<u>0.70</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: ET PROTUBERANCE- PT<sub>17</sub>

GENERAL DESCRIPTION: LOX feedline fairing

MODEL SCALE: 0.010

DRAWING NO.: VL78-000031A

DIMENSIONS:

		<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Leading edge at:	X <sub>T</sub>	<u>955.0</u>	<u>9.55</u>
	Y <sub>T</sub>	<u>70.0</u>	<u>0.70</u>
Trailing edge at:	X <sub>T</sub>	<u>2058.0</u>	<u>20.58</u>
	Y <sub>T</sub>	<u>70.0</u>	<u>0.70</u>

TABLE III.- MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: ET PROTUBERANCE - PT<sub>18</sub>

GENERAL DESCRIPTION: LH<sub>2</sub> vent line fairing

MODEL SCALE: 0.010

DRAWING NO.: VL78-000031A

DIMENSIONS:		<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Leading edge at:	X <sub>T</sub>	<u>947.0</u>	<u>9.47</u>
	Y <sub>T</sub>	<u>- 70.0</u>	<u>- 0.70</u>
Trailing edge at:	X <sub>T</sub>	<u>2058.0</u>	<u>20.58</u>
	Y <sub>T</sub>	<u>- 70.0</u>	<u>- 0.700</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: RUDDER - R<sub>5</sub>GENERAL DESCRIPTION: 2A, 3, 3A and 140A/B configurationsMODEL SCALE: 0.010DRAWING NUMBER: VL70-000146A, VL70-000095, VL70-000139DIMENSIONS:

	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft <sup>2</sup>	<u>106.38</u>	<u>0.011</u>
Span (equivalent) - In.	<u>201.0</u>	<u>2.010</u>
Inb'd equivalent chord - In.	<u>91.585</u>	<u>0.916</u>
Outb'd equivalent chord - In.	<u>50.833</u>	<u>0.508</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
At Outb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>34.83</u>	<u>34.83</u>
Trailing Edge	<u>26.25</u>	<u>26.25</u>
Hingeline	<u>34.83</u>	<u>34.83</u>
Area Moment (Normal to hinge line) - Ft <sup>3</sup>	<u>526.13</u>	<u>0.00053</u>



TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT : EXTERNAL TANK - T<sub>10</sub>

GENERAL DESCRIPTION : External Oxygen-Hydrogen Tank, 3 configuration,  
per Rockwell Lines drawing VL78-000041 and VL72-000088

MODEL SCALE: 0.010

DRAWING NUMBER: VL72-000088, VL78-000041

DIMENSIONS :

	FULL SCALE	MODEL SCALE
Length (Nose @ $X_T = 309$ )	<u>1865</u>	<u>18.65</u>
Max Width - In.	<u>324</u>	<u>3.24</u>
Max Depth	<u>--</u>	<u>---</u>
Fineness Ratio	<u>5.75617</u>	<u>5.75617</u>
Area $\text{Ft}^2$	<u>---</u>	<u>---</u>
Max. Cross-Sectional	<u>572.555</u>	<u>0.0573</u>
Planform	<u>---</u>	<u>---</u>
Wetted	<u>---</u>	<u>---</u>
Base	<u>---</u>	<u>---</u>
W.P. of tank centerline ( $X_T$ ) In.	<u>400.0</u>	<u>4.000</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: VERTICAL - V<sub>7</sub>

GENERAL DESCRIPTION: Centerline vertical tail, double-wedge airfoil with rounded leading edge.

NOTE: Same as V<sub>5</sub>, but with manipulator housing removed.

MODEL SCALE: 0.010

DRAWING NUMBER: VL70-000139

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
TOTAL DATA		
Area (Theo) - Ft <sup>2</sup>		
Planform	<u>425.92</u>	<u>0.0426</u>
Span (Theo) - In.	<u>315.72</u>	<u>3.157</u>
Aspect Ratio	<u>1.675</u>	<u>1.675</u>
Rate of Taper	<u>0.507</u>	<u>0.507</u>
Taper Ratio	<u>0.404</u>	<u>0.404</u>
Sweep-Back Angles, Degrees.		
Leading Edge	<u>45.000</u>	<u>45.000</u>
Trailing Edge	<u>26.249</u>	<u>26.249</u>
0.25 Element Line	<u>41.130</u>	<u>41.130</u>
Chords:		
Root (Theo) WP	<u>268.50</u>	<u>2.685</u>
Tip (Theo) WP	<u>108.47</u>	<u>1.085</u>
MAC	<u>199.81</u>	<u>1.998</u>
Fus. Sta. of .25 MAC	<u>1463.50</u>	<u>14.635</u>
W.P. of .25 MAC	<u>635.522</u>	<u>6.355</u>
B.L. of .25 MAC	<u>0.00</u>	<u>0.00</u>
Airfoil Section		
Leading Wedge Angle - Deg.	<u>10.000</u>	<u>10.000</u>
Trailing Wedge Angle - Deg.	<u>14.920</u>	<u>14.920</u>
Leading Edge Radius	<u>2.0</u>	<u>0.02</u>
Void Area - Ft <sup>2</sup>	<u>13.17</u>	<u>0.0013</u>
Blanketed Area	<u>0.00</u>	<u>0.00</u>

TABLE III. - MODEL DIMENSIONAL DATA - Concluded.

MODEL COMPONENT: WING-W<sub>107</sub>GENERAL DESCRIPTION: Configuration 3 per Rockwell Lines VL70-000139BNOTE: Same as W<sub>108</sub>, except cuff, airfoil and incidence angle.MODEL SCALE: 0.010

TEST NO.

DWG. NO. VL70-000139BDIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATAArea (Theo.)  $\text{Ft}^2$ 

Planform

Span (Theo) In.

Aspect Ratio

Rate of Taper

Taper Ratio

Dihedral Angle, degrees

Incidence Angle, degrees

Aerodynamic Twist, degrees

Sweep Back Angles, degrees

Leading Edge

Trailing Edge

0.25 Element Line

## Chords:

Root (Theo) B.P.O.O.

Tip, (Theo) B.P.

MAC

Fus. Sta. of .25 MAC

W.P. of .25 MAC

B.L. of .25 MAC

EXPOSED DATAArea (Theo)  $\text{Ft}^2$ 

Span, (Theo) In. BP108

Aspect Ratio

Taper Ratio

## Chords

Root BP108

Tip  $1.00 \frac{b}{2}$ 

MAC

Fus. Sta. of .25 MAC

W.P. of .25 MAC

B.L. of .25 MAC

Airfoil Section (Rockwell Mod NASA)  
XXXX-64Root  $\frac{b}{2} =$ Tip  $\frac{b}{2} =$ 

Data for (1) of (2) Sides

Leading Edge Cuff

Planform Area  $\text{Ft}^2$ 

Leading Edge Intersects Fus M. L. @ Sta

Leading Edge Intersects Wing @ Sta

TABLE IV.  
JET COEFFICIENTS

JET COEFFICIENT	IA60		OA105/OA85		
	q = 7 PSF T = 953 #/JET	q = 20 PSF T = 965 #/JET	q = 7 PSF T = 953 #/JET	q = 20 PSF T = 965 #/JET	q = 50 PSF T = 950 #/JET
$C_{NJD}$	.1866	.06612	.1866	.06612	.02604
$C_{NJU}$	-.1012	-.03588	-.1012	-.03588	-.01413
$C_{YJS}$	.2025	.07176	.2024	.07175	.02825
$C_{mJU}$	.04317	.0153	.09556	.03387	.01334
$C_{mJD}$	-.08392	-.02974	-.1817	-.06440	-.02536
$C_{nJS}$	-.08728	-.03093	-.09819	-.03480	-.01370
$C_{\ell JU}$	.01036	.003671	.01426	.005056	.001991
$C_{\ell JD}$	.01182	.004189	.01358	.004814	.001896
$C_{\ell JU/D}$	.02218	.00786	.02785	.009869	.003886

Subscripts:

JD - Down

JU - Up

JS - Side

JU/D - Combined up and down

**Notes:**

1. Positive directions of force coefficients, moment coefficients, and angles are indicated by arrow
2. For clarity, origins of wind and stability axes have been displaced from the center of gravity

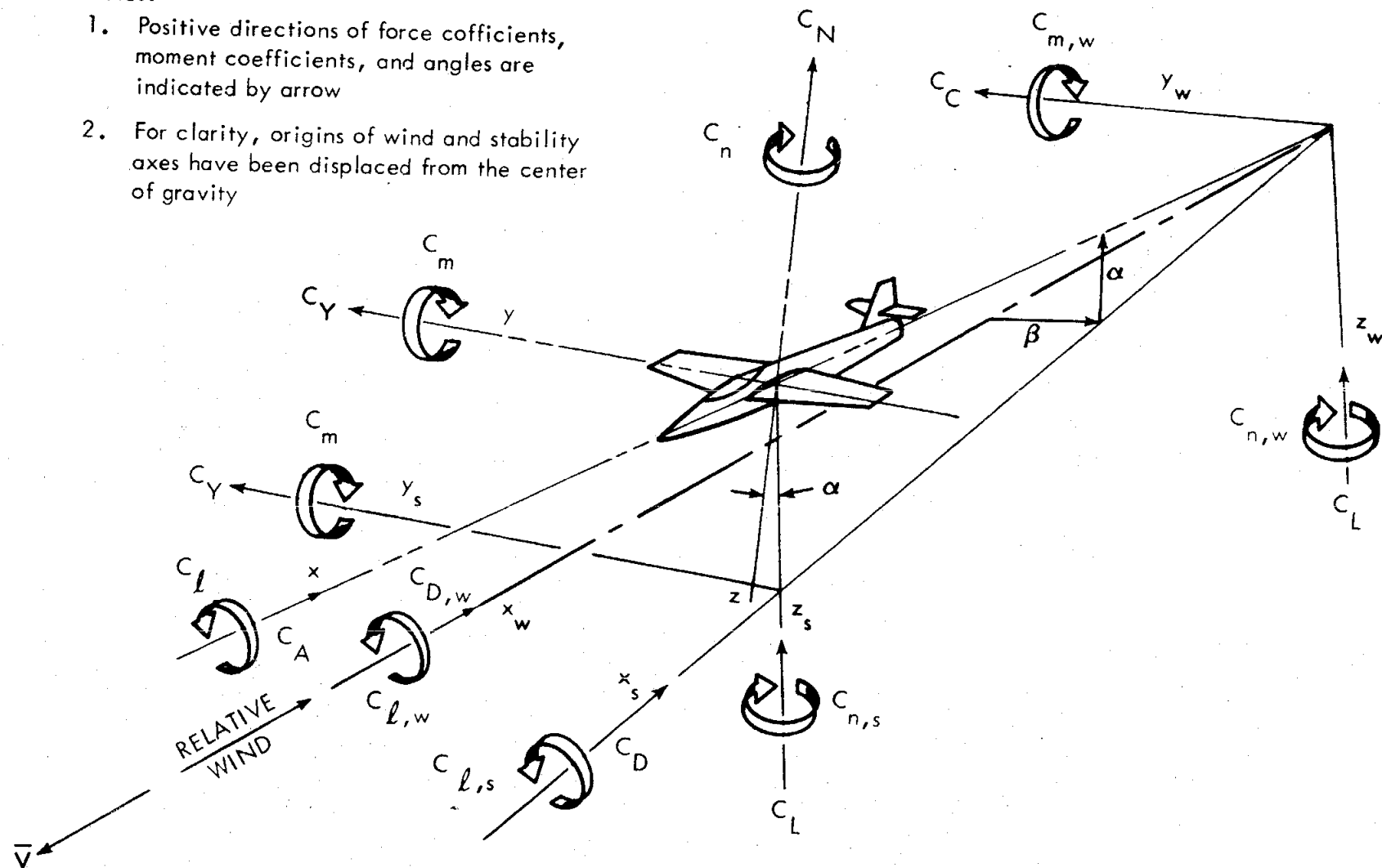
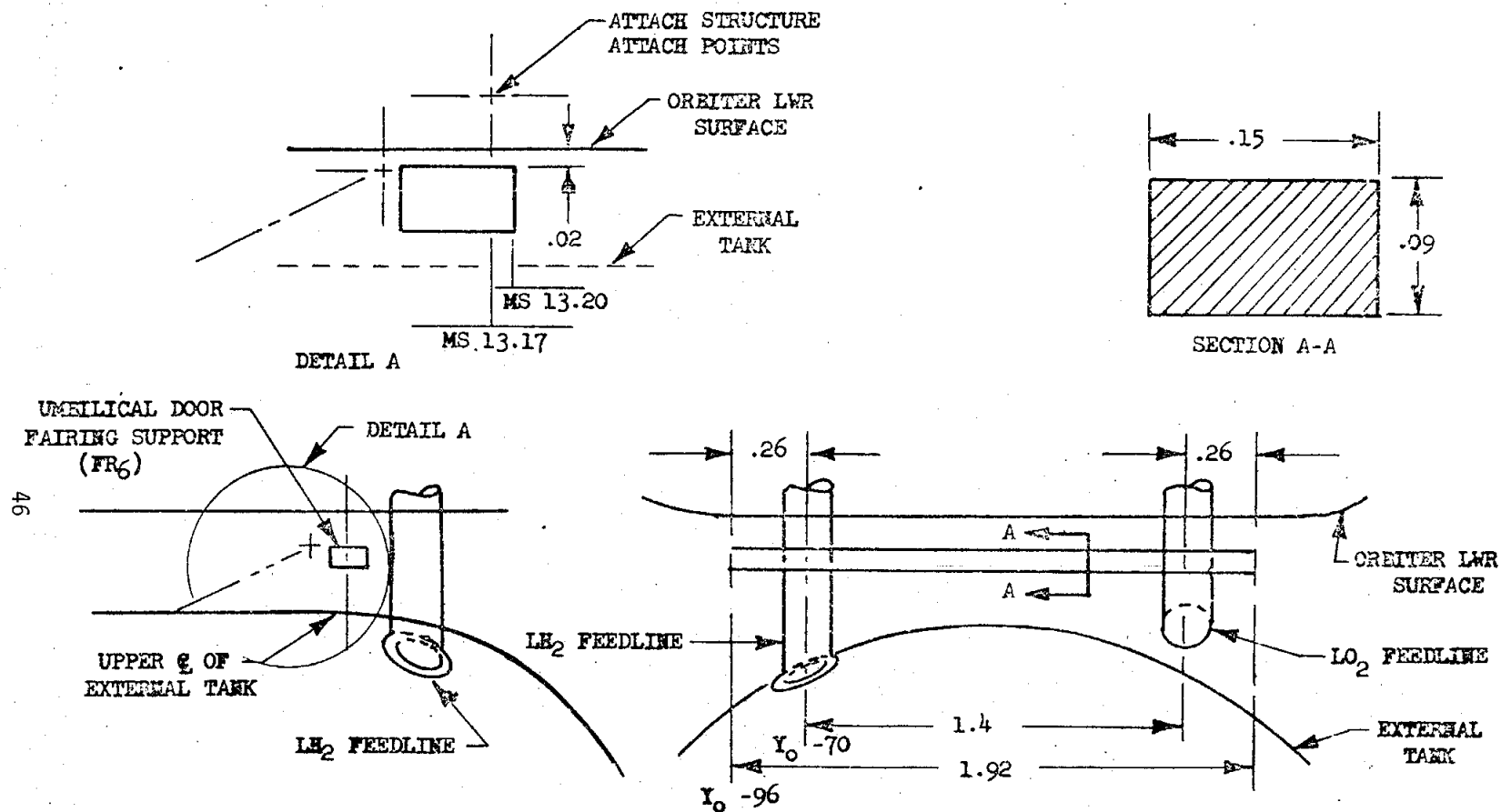


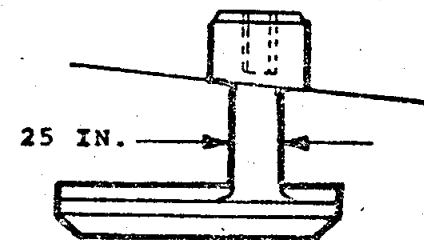
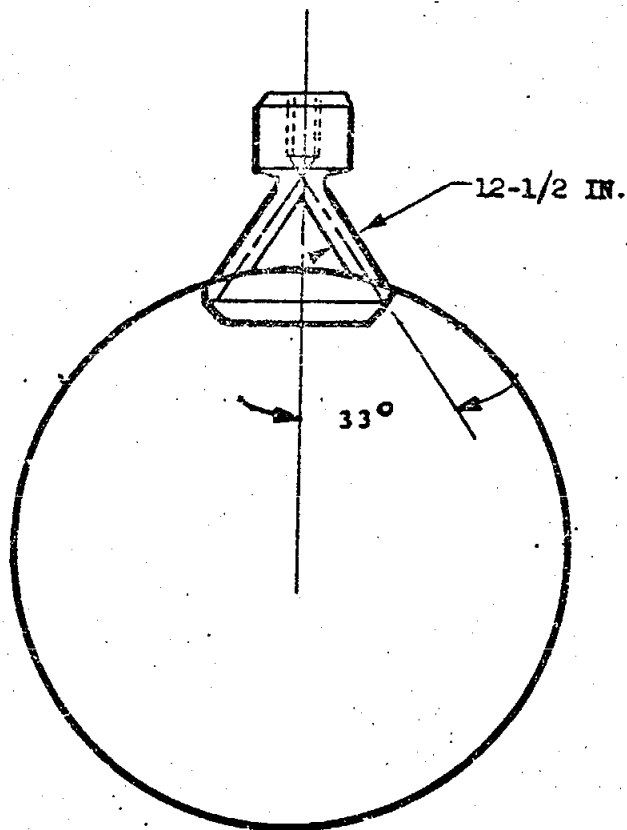
Figure 1. - Axis systems.



NOTE: ALL DIMENSIONS ARE APPROXIMATE  
AND IN INCHES

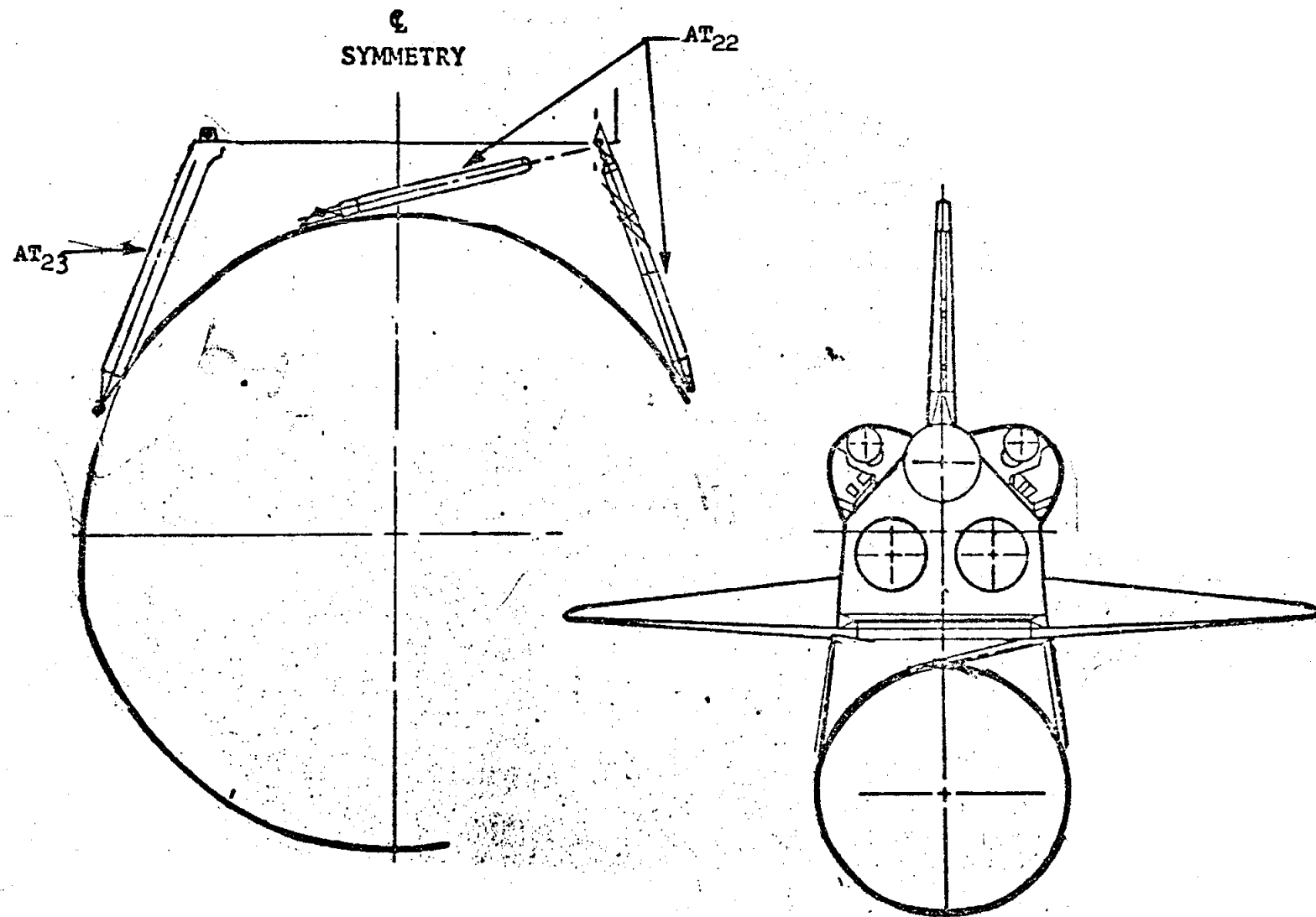
a. Orbiter umbilical door fairing support (FR<sub>6</sub>) and LO<sub>2</sub>(FL<sub>7</sub>) and LH<sub>2</sub>(FL<sub>8</sub>) Feedlines

Figure 2. - Model Sketches.



b. Forward attachment of the external tank to the orbiter (AT<sub>21</sub>)

Figure 2. - Continued.



c. Aft attachment of external tank to orbiter ( $AT_{22,23}$ )

Figure 2. - Continued.



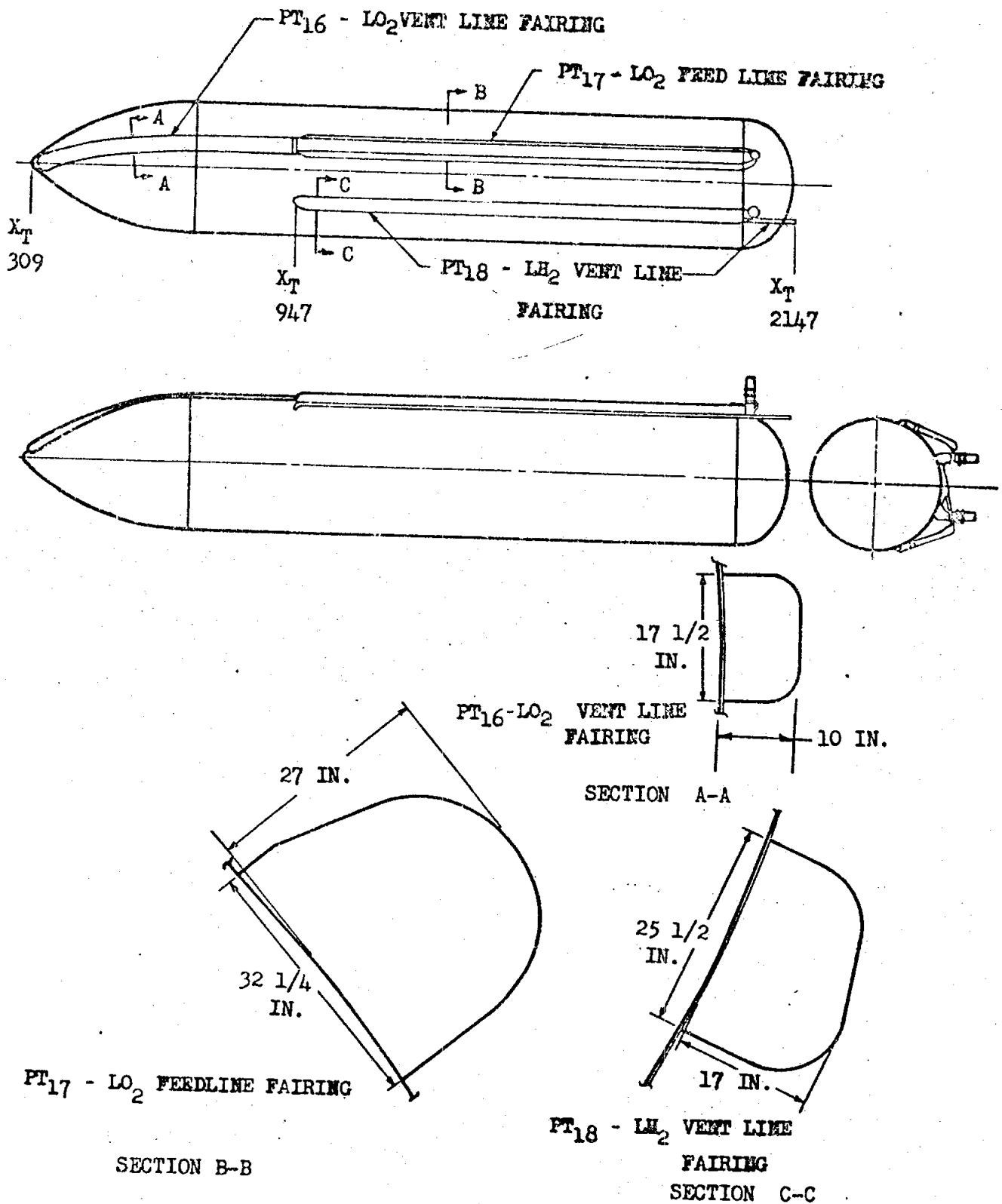


Figure 2. - Concluded.

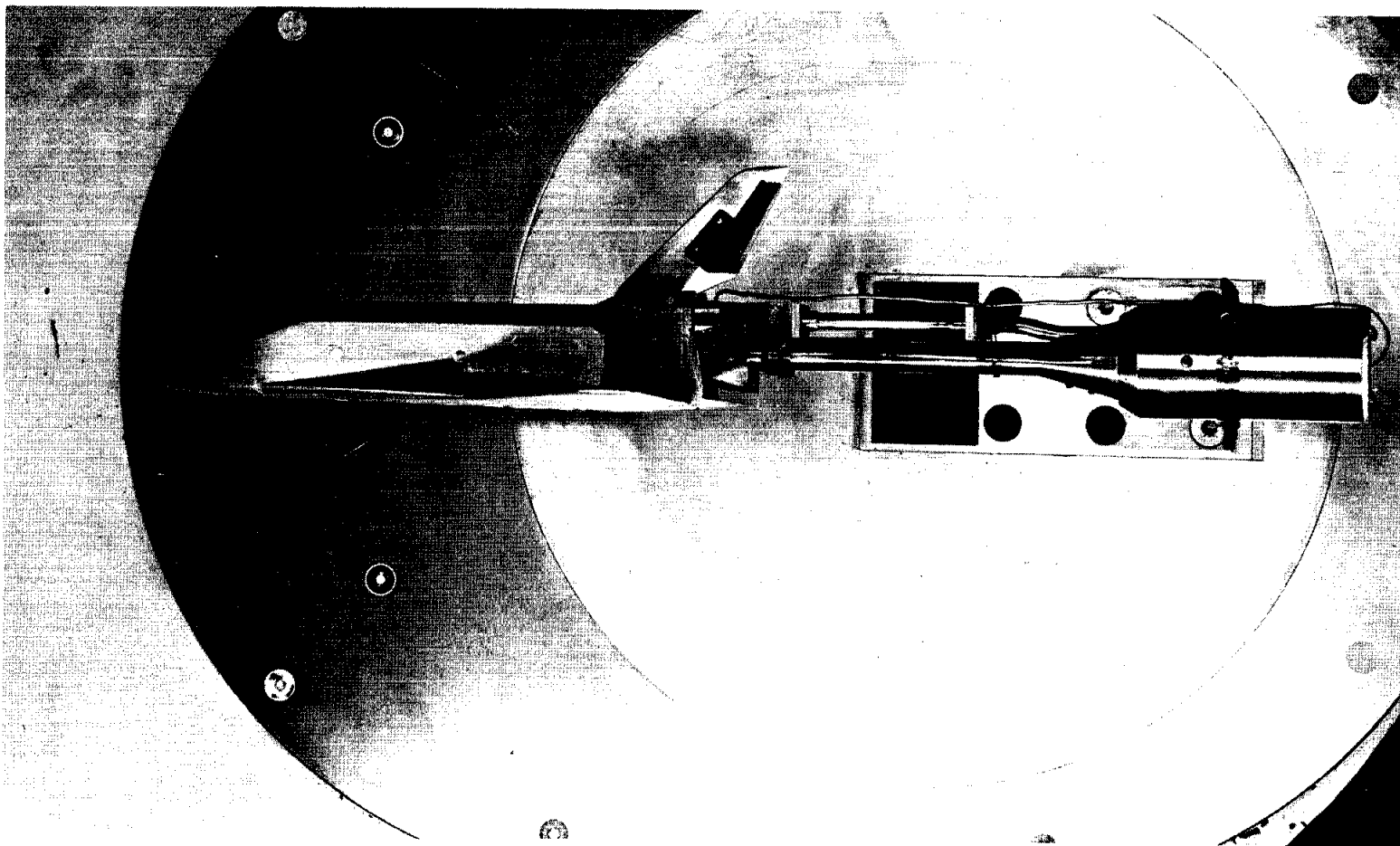


Figure 3. Model Installation Photograph

## DATA FIGURES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(C01009)	OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN	.000	167.000	20.000	.000	SREF	2690.0000	SQ.FT.
(C01001)	OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN	15.000	167.000	20.000	.000	LREF	474.8100	IN.
						BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	IN

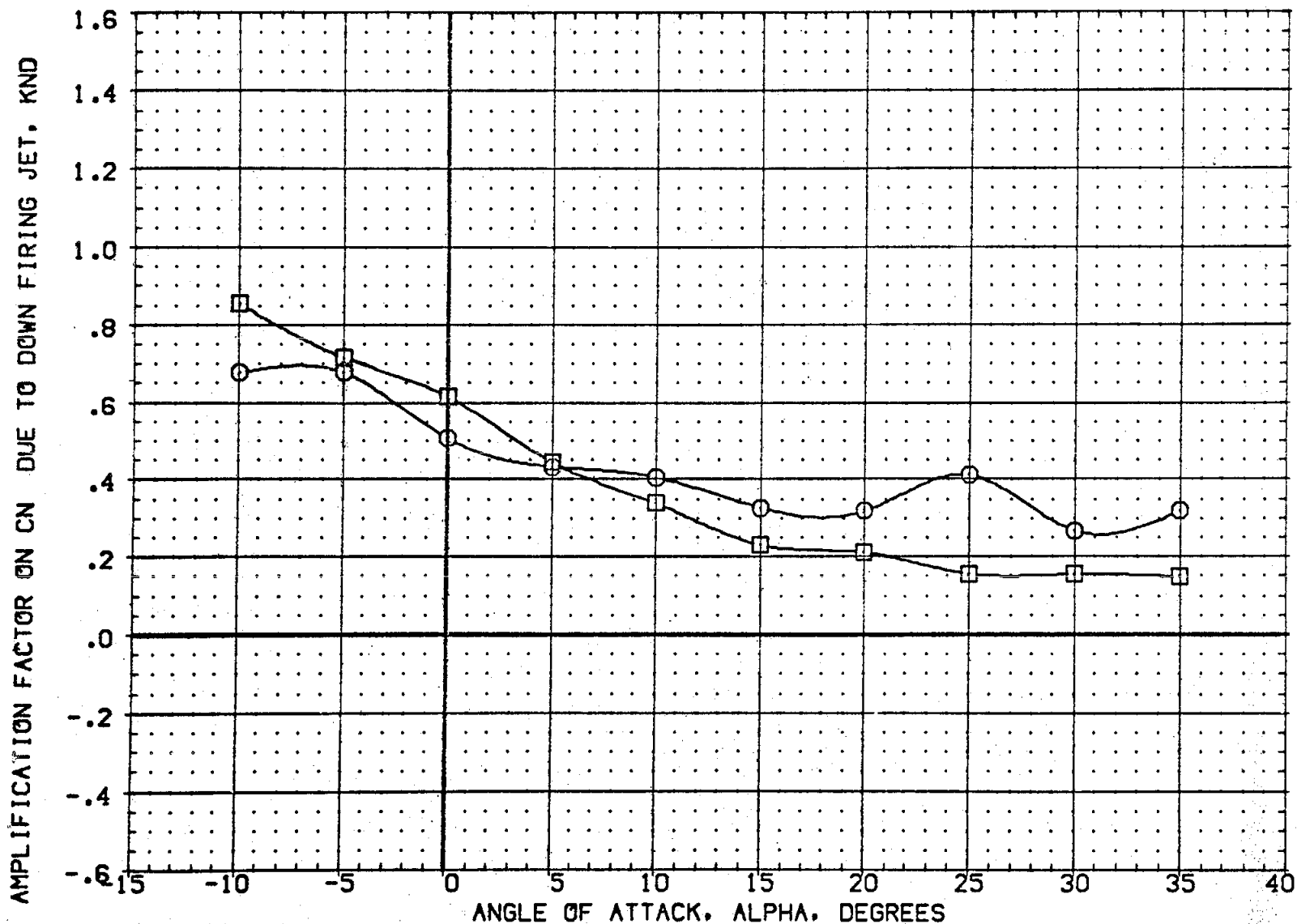


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(C01009)	OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN	.000	167.000	20.000	.000	SREF	2690.0000	SQ.FT.
(C01001)	OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN	15.000	167.000	20.000	.000	LREF	474.8100	IN.
						BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	IN.

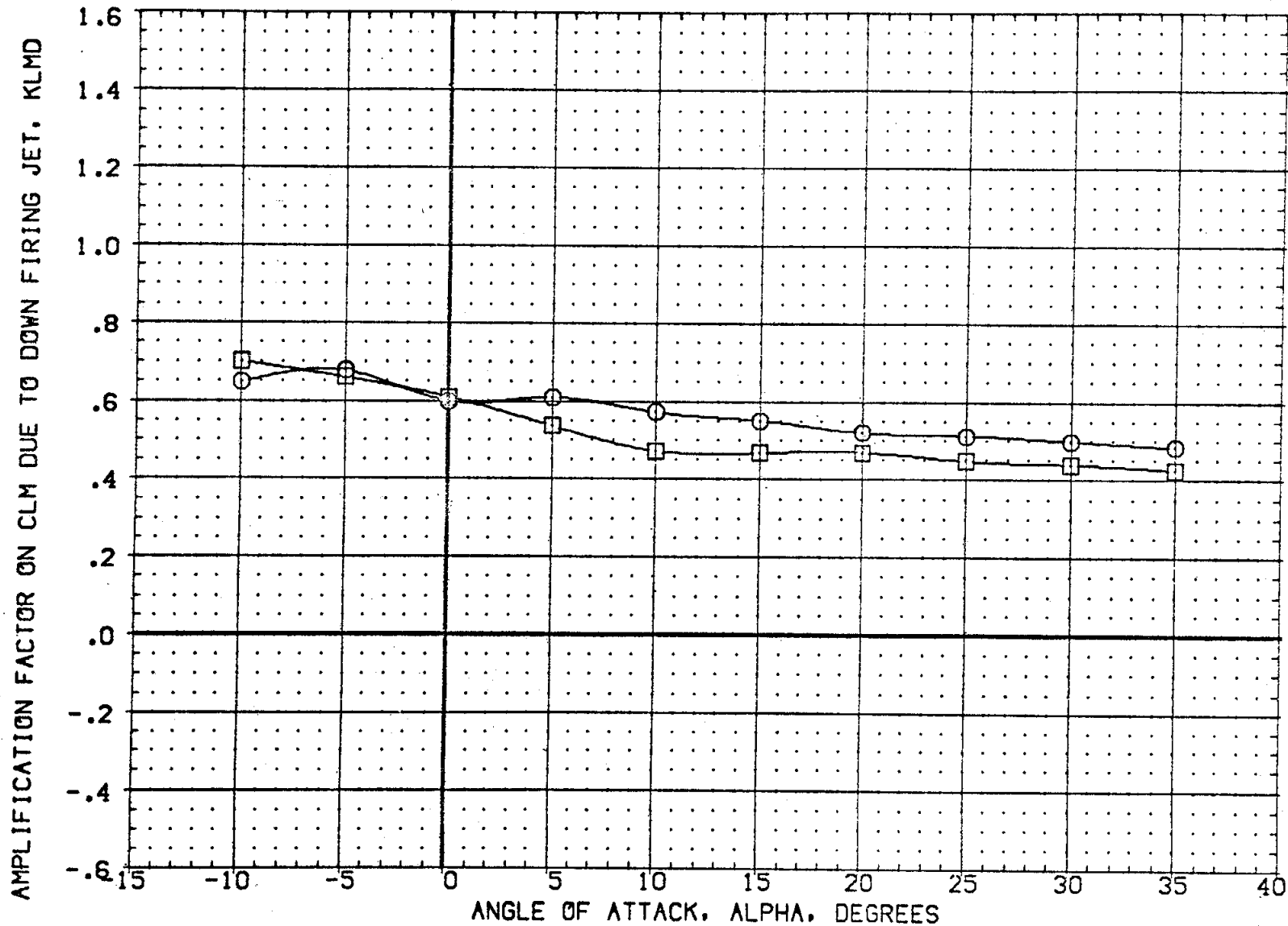


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (CG1009) ○ OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN  
 (CG1001) □ OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN

ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
.000	167.000	20.000	.000	SREF	2690.0000	SQ.FT.
15.000	167.000	20.000	.000	LREF	474.8100	IN.
				BREF	936.6800	IN.
				XMRP	1076.6700	IN. X0
				YMRP	.0000	IN. Y0
				ZMRP	375.0000	IN. Z0
				SCALE	.0100	IN

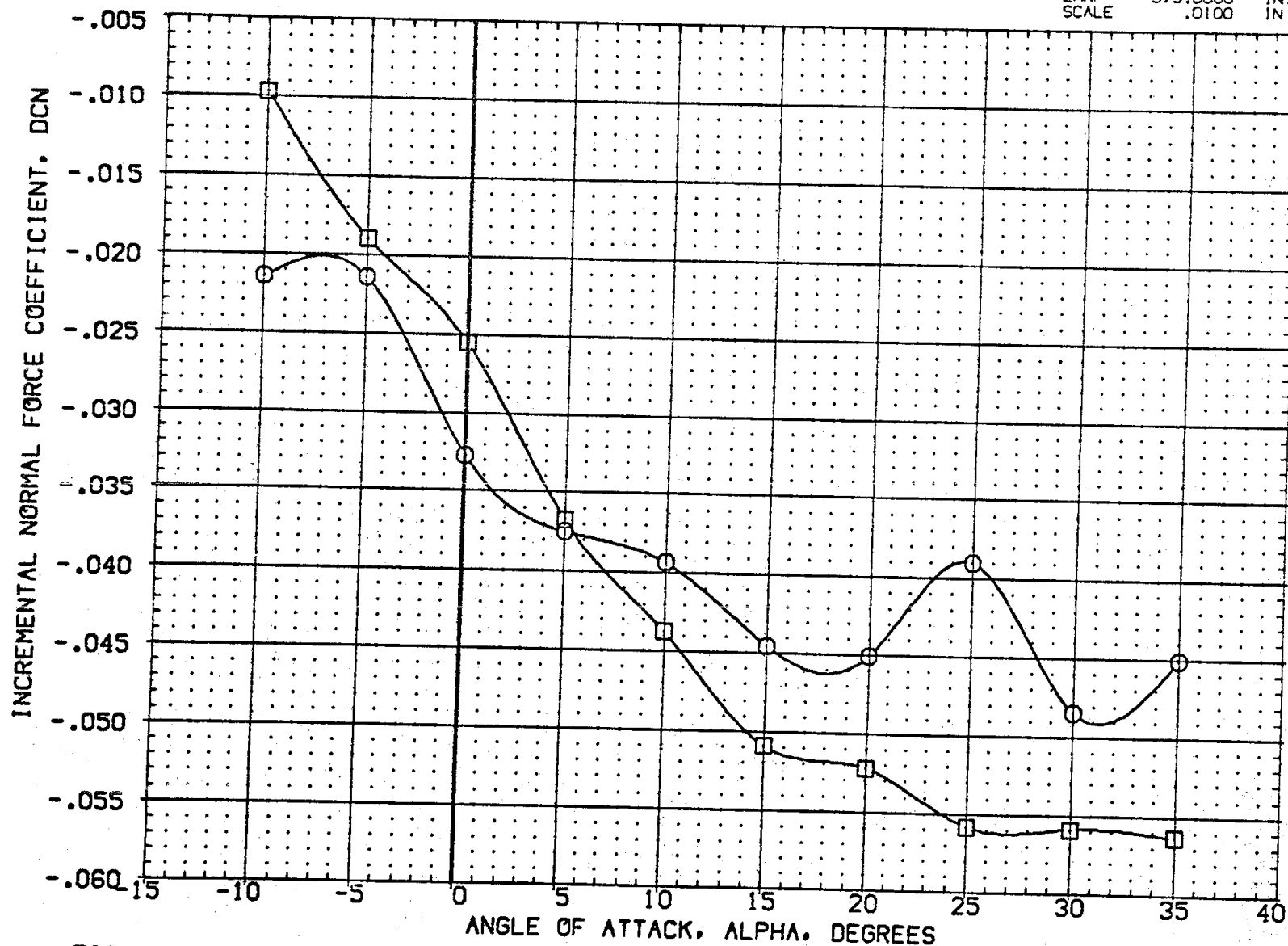


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (CQ1009) ○ OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN  
 (CQ1001) □ OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN

ELEVON	PCRC5	Q-SIM	BDFLAP	REFERENCE INFORMATION		
.000	167.000	20.000	.000	SREF	2690.0000	50. FT.
15.000	167.000	20.000	.000	LREF	474.8100	IN.
				BREF	936.6800	IN.
				XMRP	1076.6700	IN. X0
				YMRP	.0000	IN. Y0
				ZMRP	375.0000	IN. Z0
				SCALE	.0100	IN

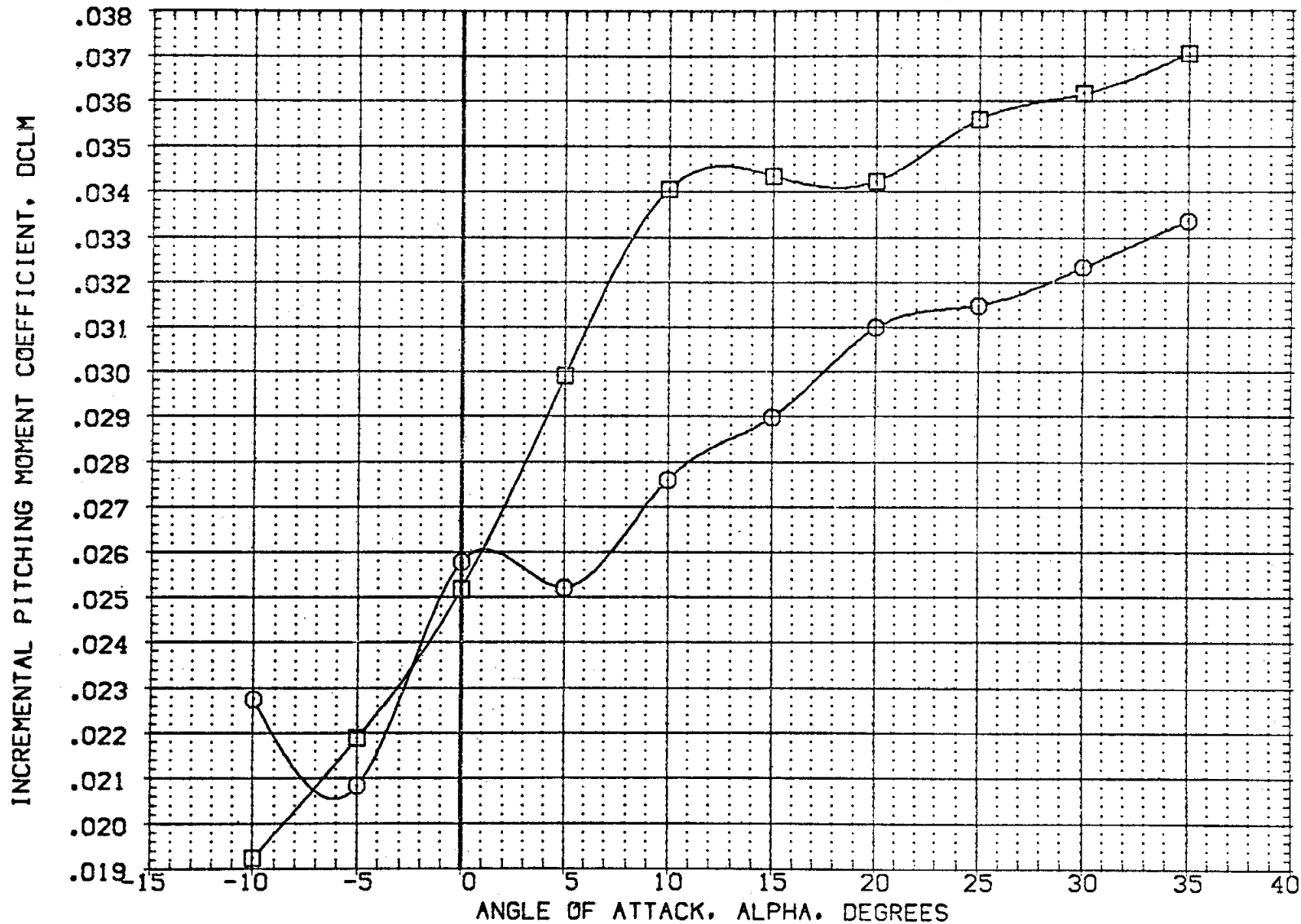


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(Z0109N)	OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN	.000	167.000	20.000	.000	SREF	2690.0000	SQ.FT.
(Z0101N)	OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN	15.000	167.000	20.000	.000	LREF	474.8100	IN.
(Z0103F)	OA-85 CFHT101 MODEL 32-0 01 N52 RCS OFF	.000	.000	.000	.000	BREF	936.6800	IN.
(Z0101F)	OA-85 CFHT101 MODEL 32-0 01 N49 N50 RCS OFF	15.000	.000	.000	.000	XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	IN.

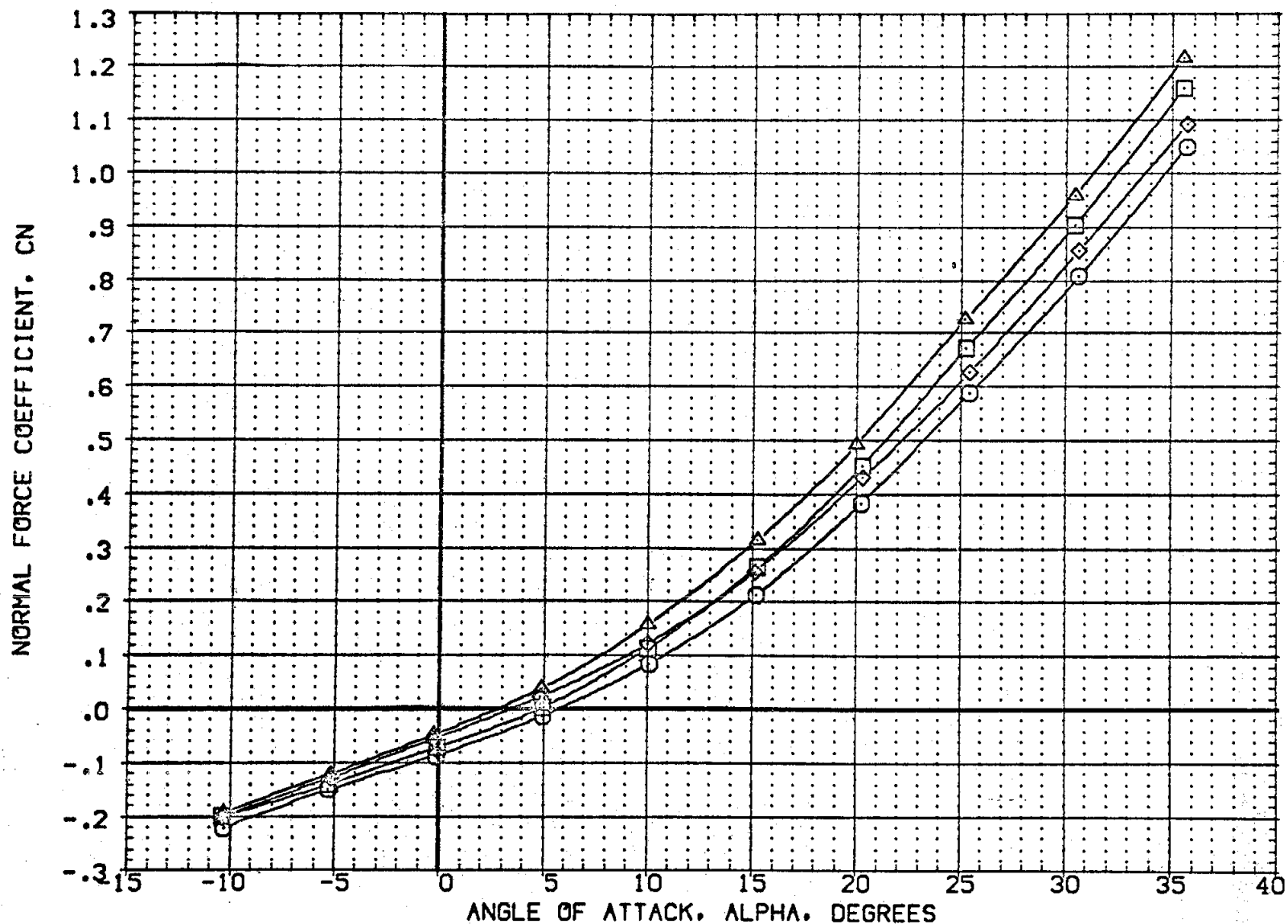


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(ZQ109N)	OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN	.000	167.000	20.000	.000	SREF	2690.0000	50. FT.
(ZQ101N)	OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN	15.000	167.000	20.000	.000	LREF	474.8100	IN.
(ZQ103F)	OA-85 CFHT101 MODEL 32-0 01 N52 RCS OFF	.000	.000	.000	.000	BREF	936.6800	IN.
(ZQ101F)	OA-85 CFHT101 MODEL 32-0 01 N49 N50 RCS OFF	15.000	.000	.000	.000	XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	IN.

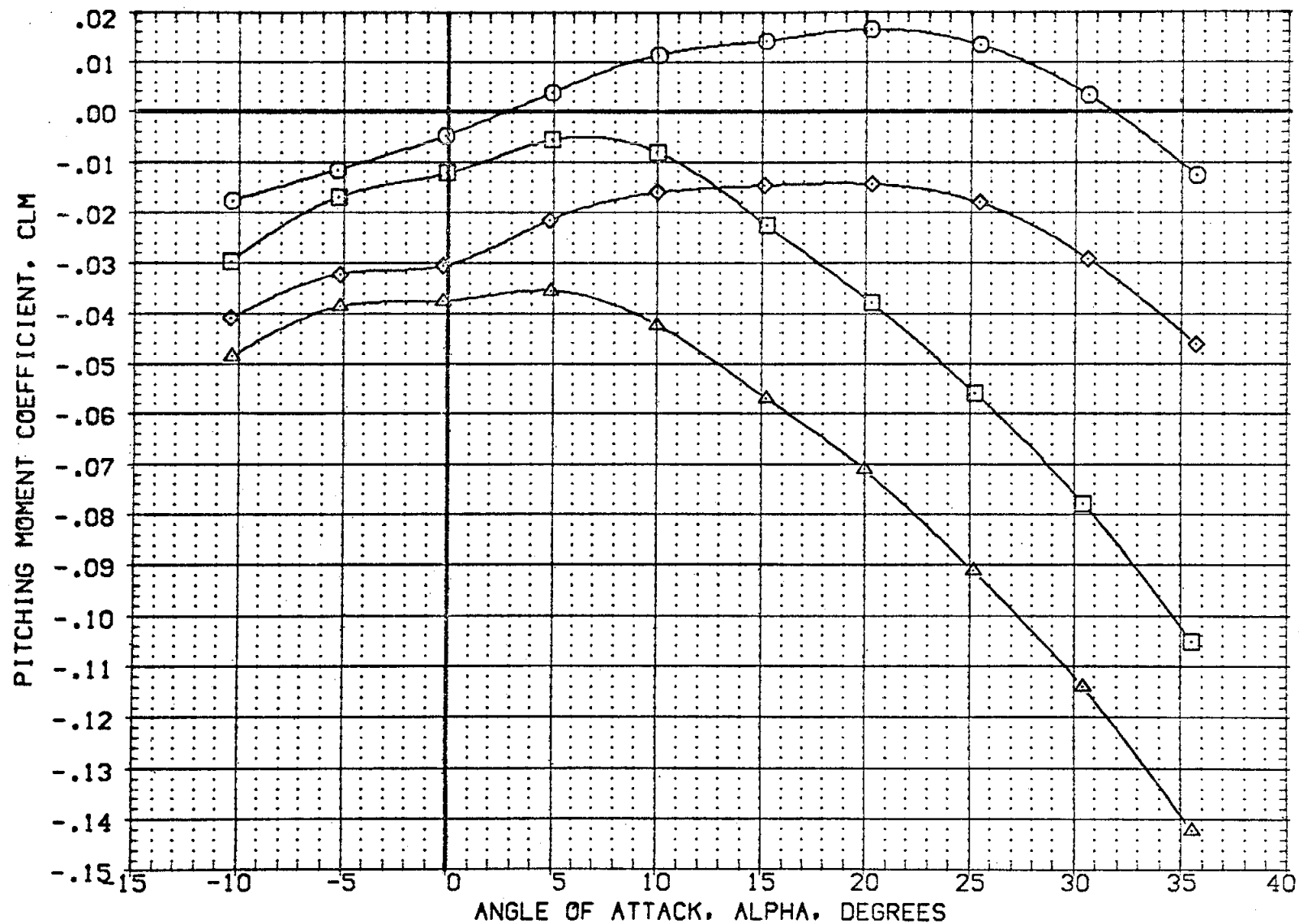


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2027)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N52  
(CH2026)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N52

PITCH UP  
PITCH UP

ELEVON  
-20.000  
.000

PCRC5  
446.000  
446.000

Q-SIM  
7.000  
7.000

BOFLAP  
.000  
.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

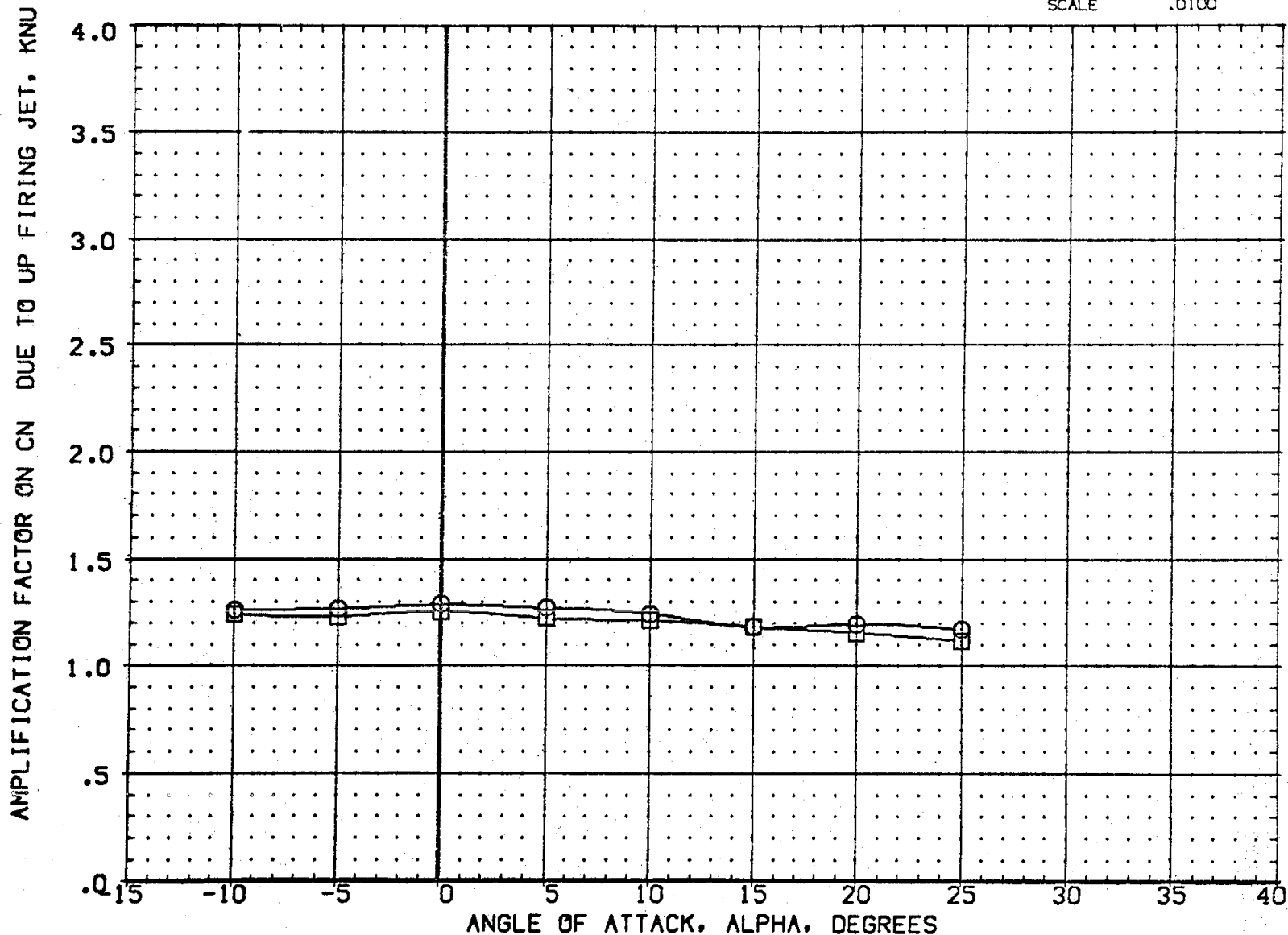


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION
(CH2027)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-20.000	446.000	7.000	SREF 2690.0000 SQ.FT.
(CH2026)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	7.000	LREF 474.8100 IN.
						BREF 936.6900 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

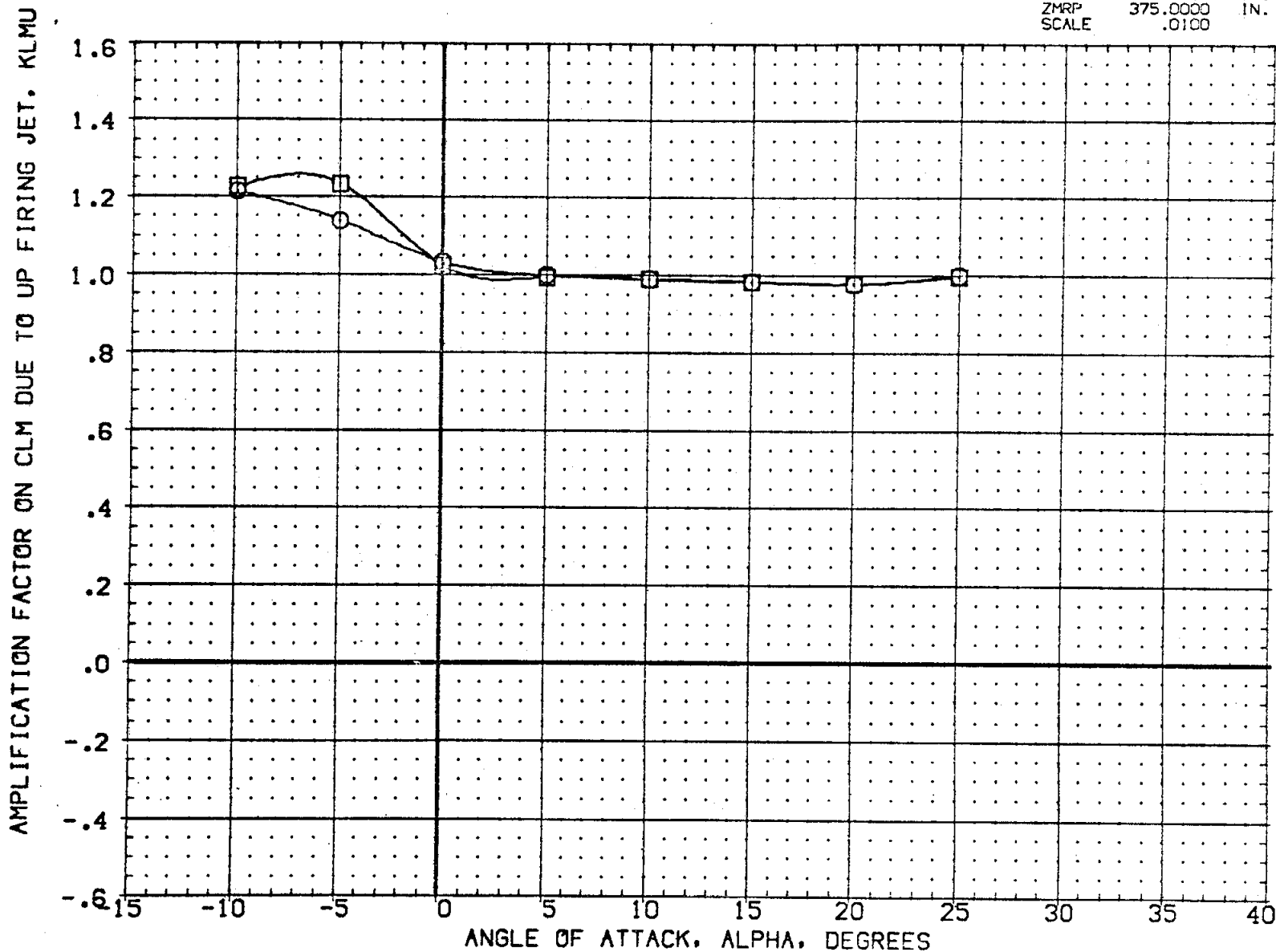


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION
(CH2027)	0A105 CFHT109 MODEL 32-0 (O)N52	PITCH UP	-20.000	446.000	7.000	SREF 2690.0000 SQ.FT.
(CH2026)	0A105 CFHT109 MODEL 32-0 (O)N52	PITCH UP	.000	446.000	7.000	LREF 474.8100 IN.
						BREF 936.6800 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

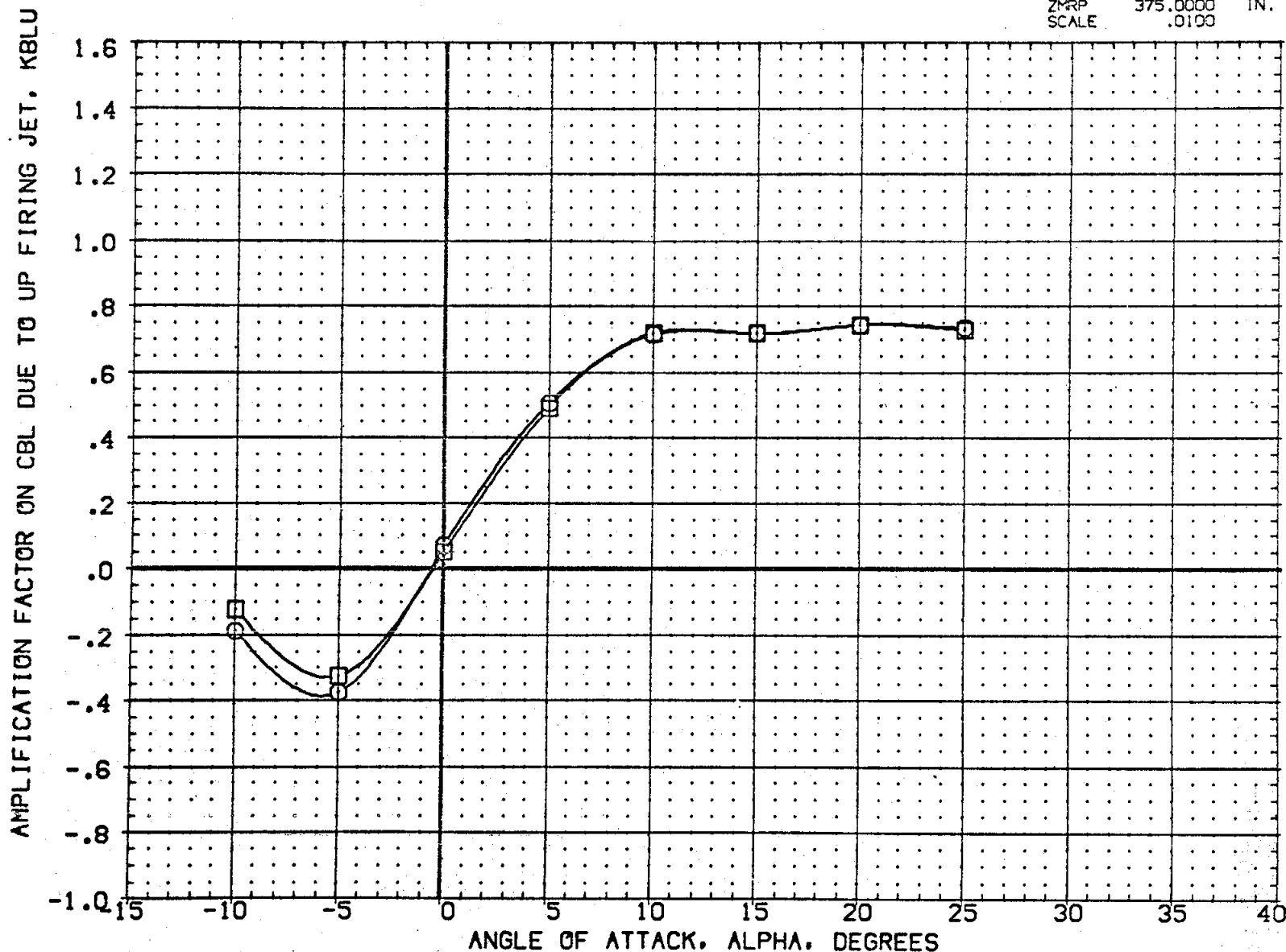


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2027) ☐ 0A105 CFHT109 MODEL 32-0 (0)N52  
 (CH2026) ☐ 0A105 CFHT109 MODEL 32-0 (0)N52

PITCH UP  
 PITCH UP

ELEVON PCRC5 Q-SIM BOFLAP  
 -20.000 446.000 7.000 .000  
 .000 446.000 7.000 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100

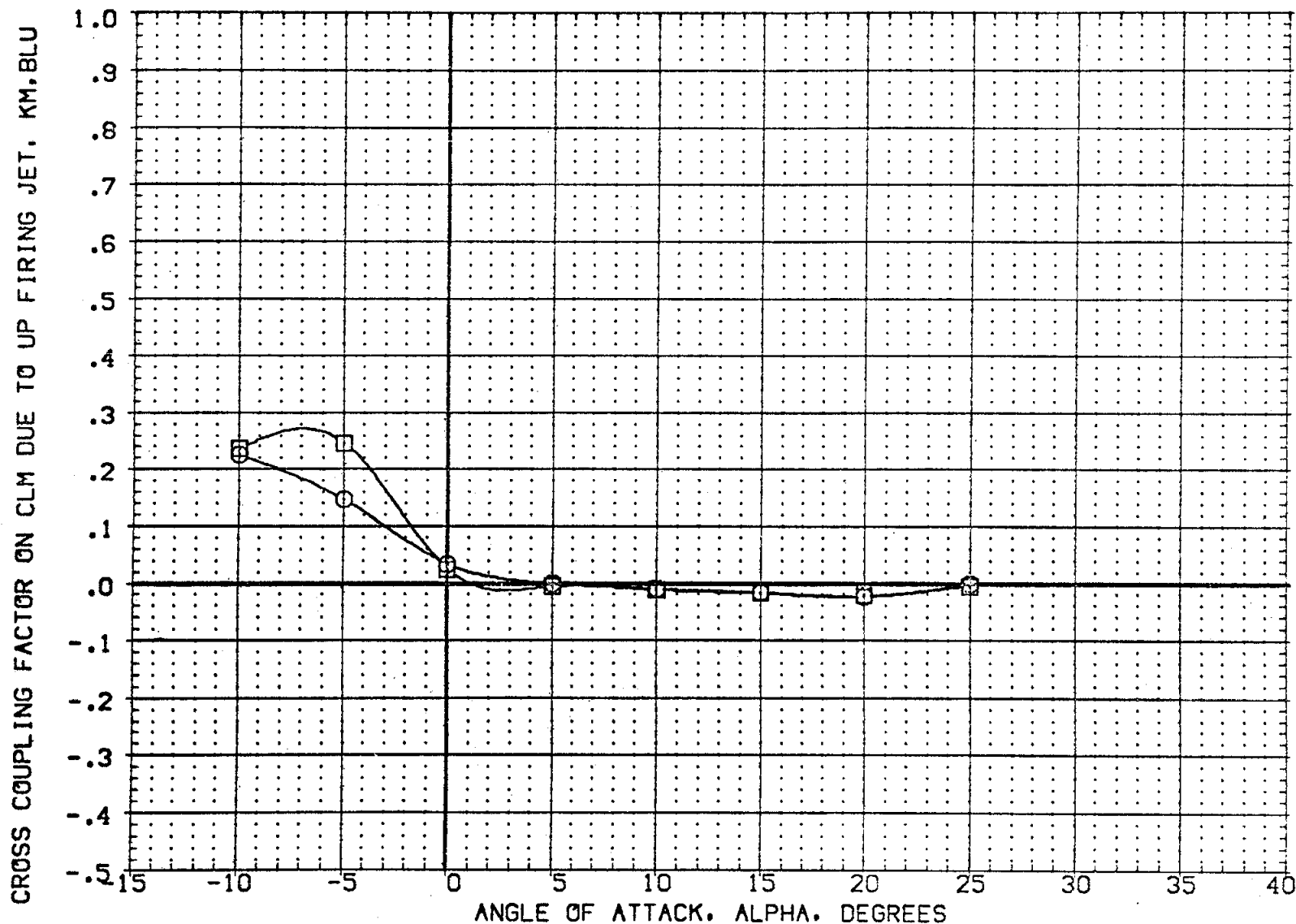




FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2027)  0A105 CFHT109 MODEL 32-0 (0)N52  
 (CH2026)  0A105 CFHT109 MODEL 32-0 (0)N52

PITCH UP  
 PITCH UP

ELEVON -20.000 446.000  
 .000 446.000

Q-SIM 7.000  
 7.000

BOFLAP .000  
 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100

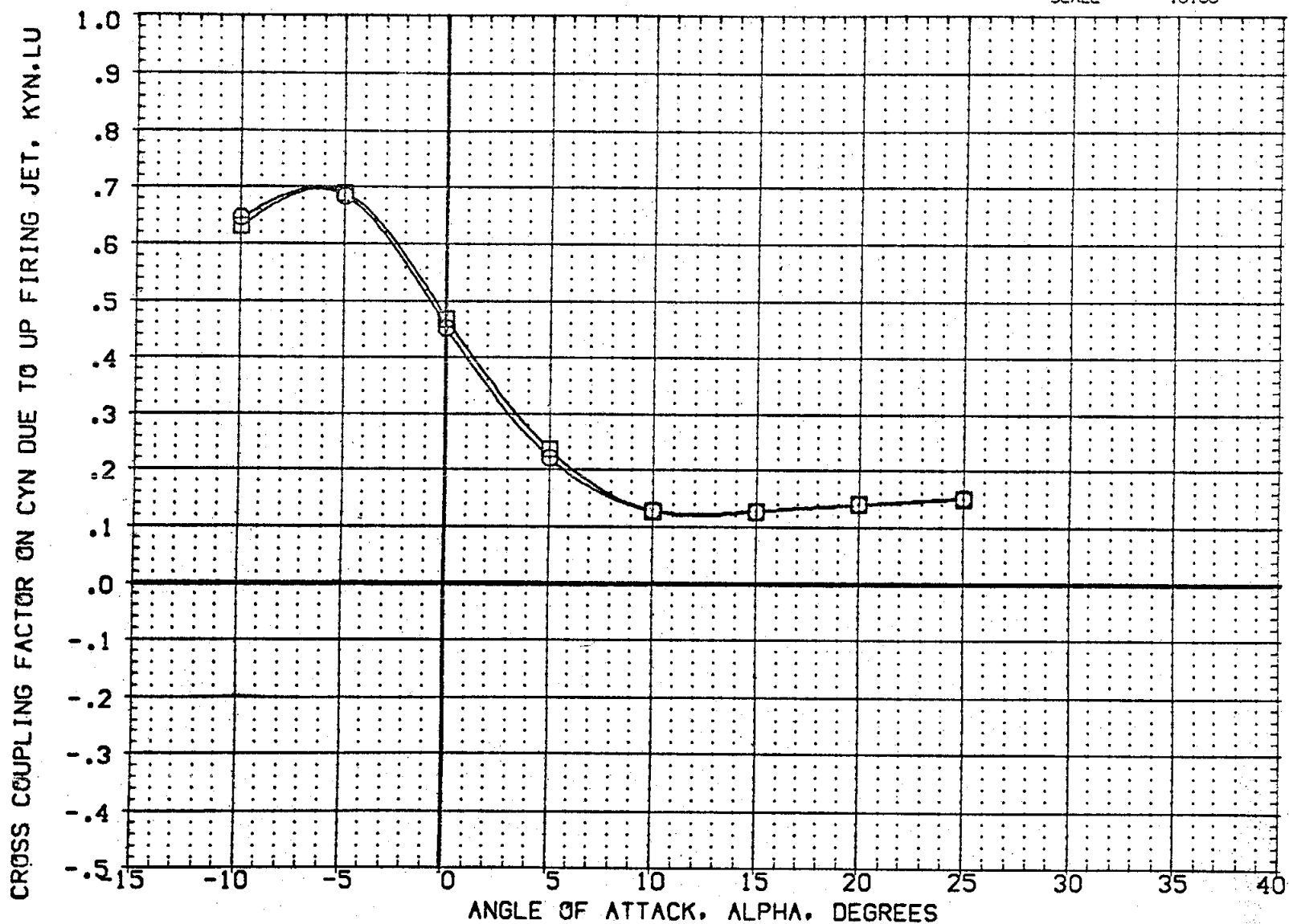




FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2027)  0A105 CFHT109 MODEL 32-0 (0)N52  
(CH2026)  0A105 CFHT105 MODEL 32-0 (0)N52

PITCH UP  
PITCH UP

ELEVON -20.000 446.000  
PCRC5 .000 446.000

Q-SIM 7.000  
7.000

BOFLAP .000  
.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6900 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

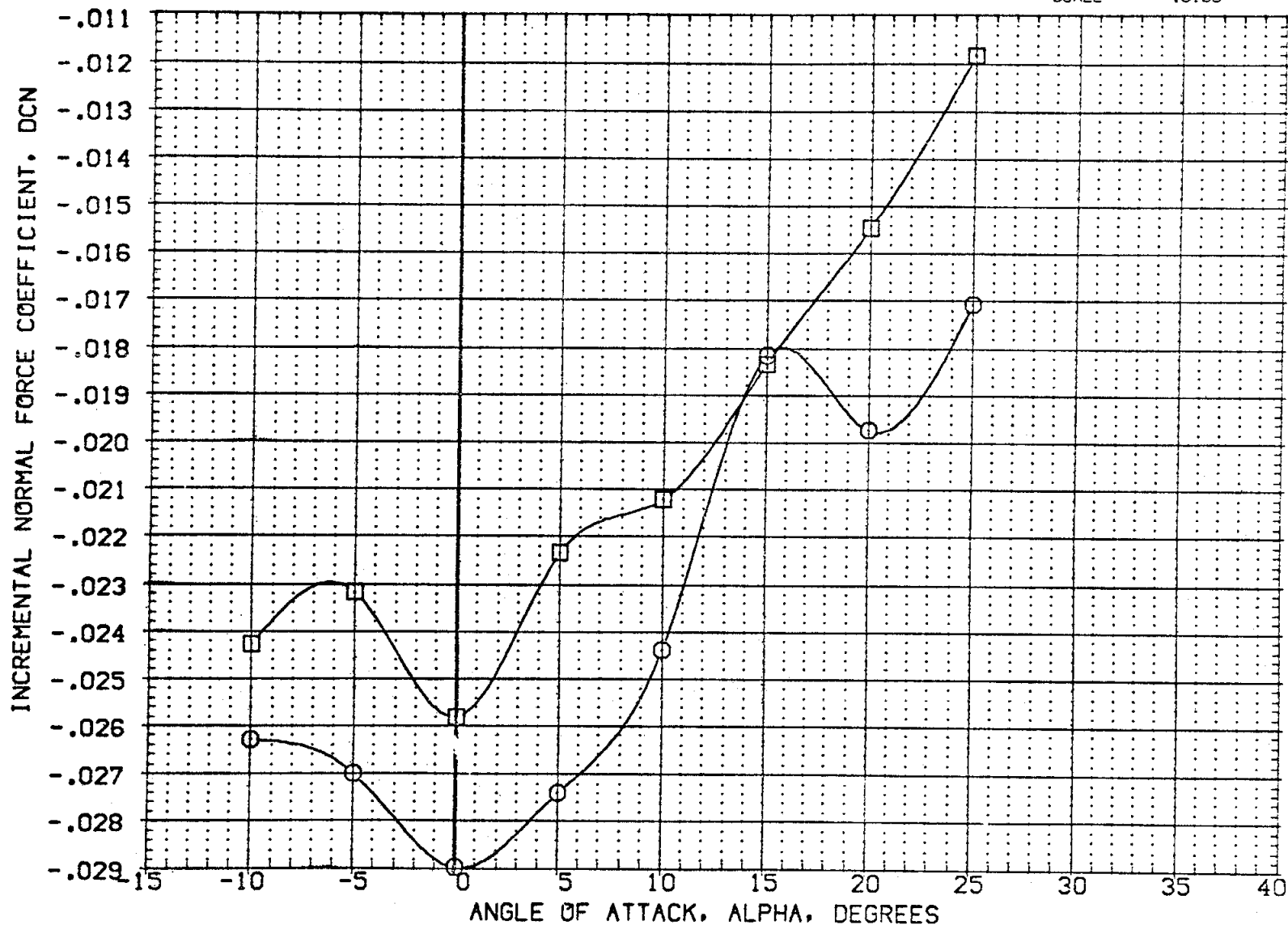


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION	
(CH2027)	0A105 CRHT109 MODEL 32-0 (0)N52	PITCH UP	-20.000	446.000	7.000	SREF	2690.0000 SQ.FT.
(CH2026)	0A105 CRHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	7.000	LREF	474.8100 IN.
						BREF	936.6800 IN.
						XMRP	1076.6700 IN. XO
						YMRP	.0000 IN. YO
						ZMRP	375.0000 IN. ZO
						SCALE	.0100

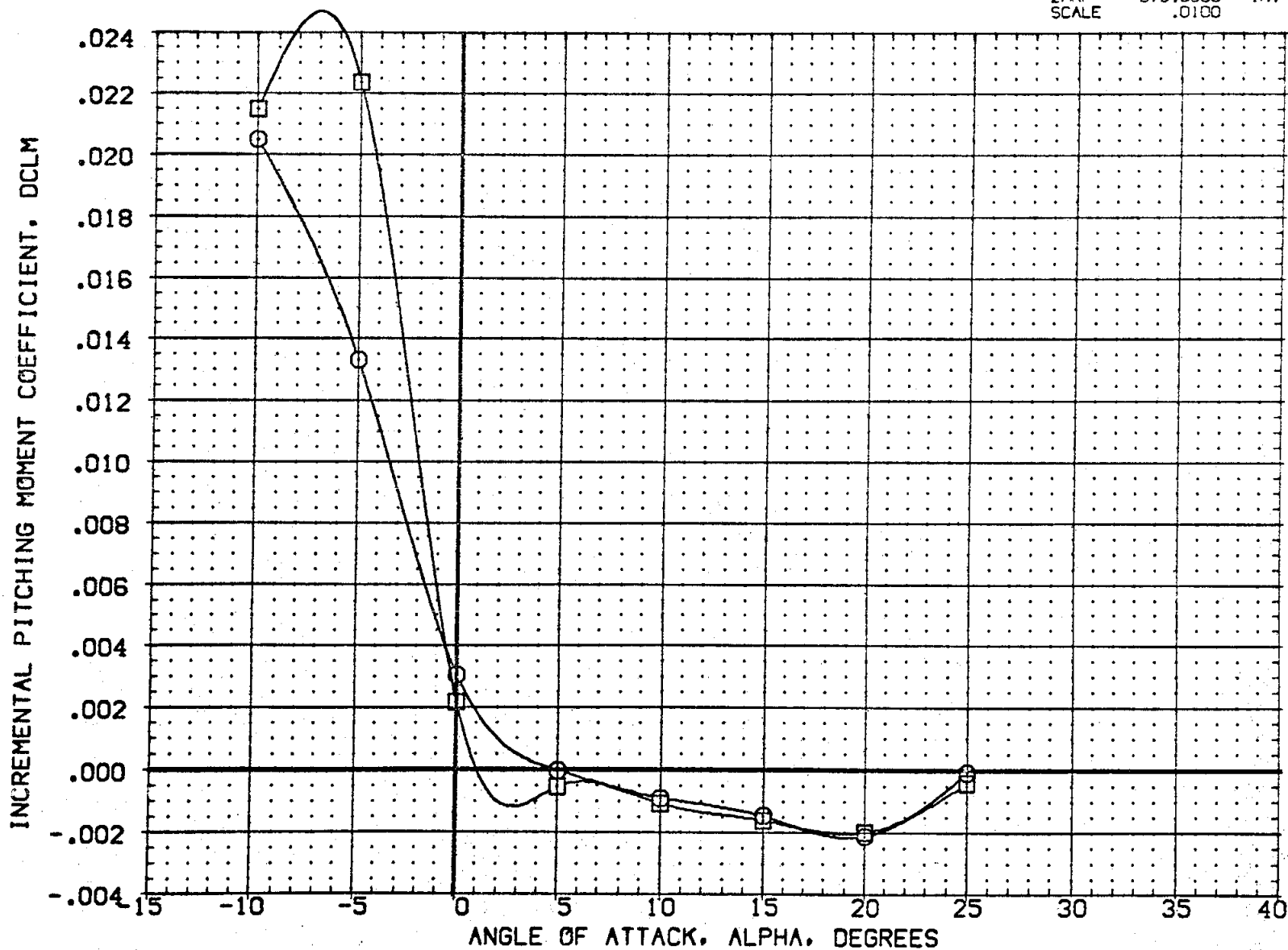


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2027) ☐ CA105 CFHT109 MODEL 32-0 (0)N52  
 (CH2026) ☐ CA105 CFHT109 MODEL 32-0 (0)N52

PITCH UP  
 PITCH UP

ELEVON PCRC5 Q-SIM BOFLAP  
 -20.000 446.000 7.000 .000  
 .000 446.000 7.000 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6900 IN.  
 XMRP 1076.6700 IN. XO  
 YMRP .0000 IN. YO  
 ZMRP 375.0000 IN. ZO  
 SCALE .0100

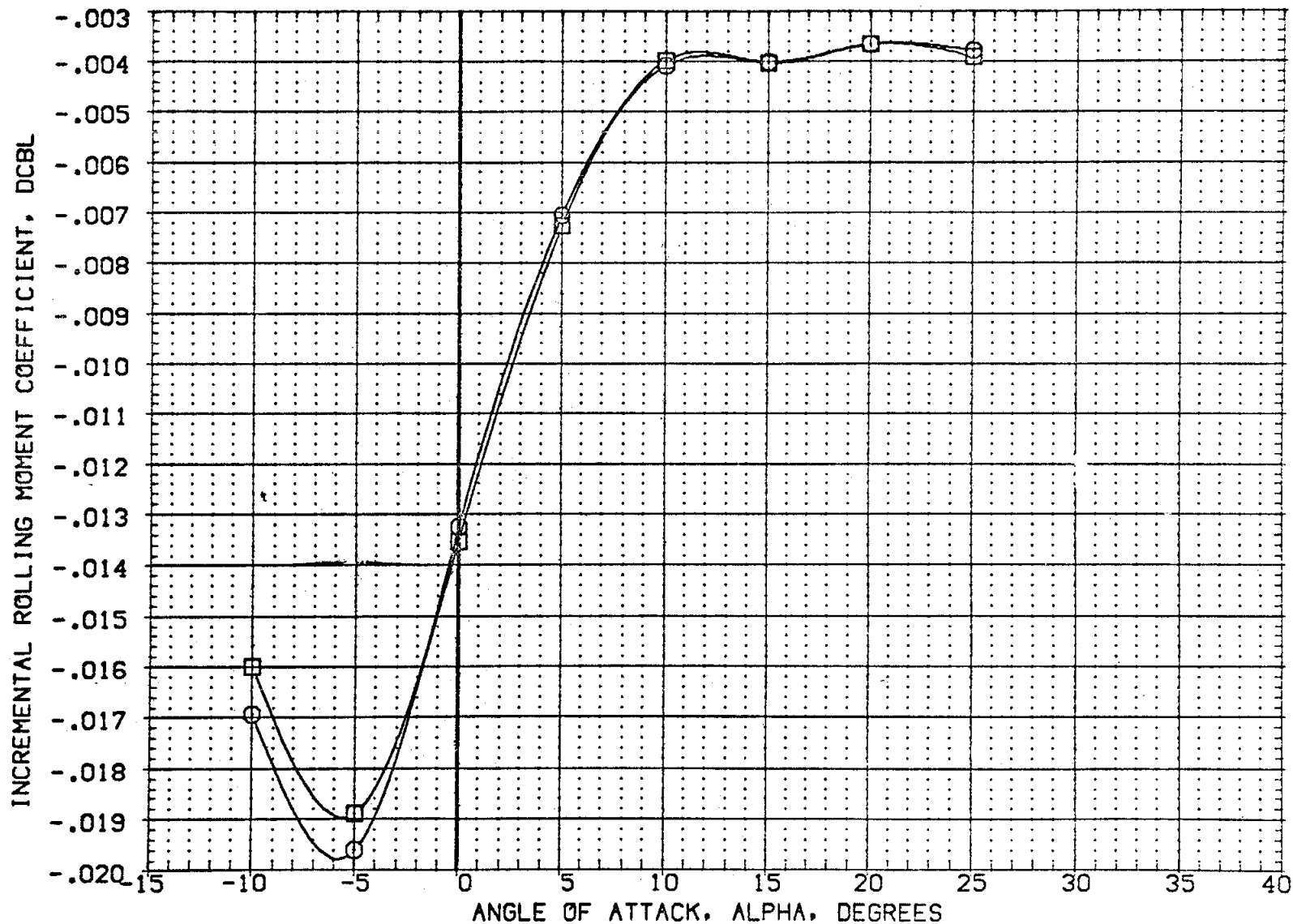


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2027) ○ 0A105 CFHT109 MODEL 32-0 (0)N52  
 (CH2026) □ 0A105 CFHT109 MODEL 32-0 (0)N52

PITCH UP  
 PITCH UP

ELEVON  
 -20.000  
 .000

PCRC5  
 446.000  
 446.000

Q-SIM  
 7.000  
 7.000

BOFLAP  
 .000  
 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. XC  
 YMRP .0000 IN. YC  
 ZMRP 375.0000 IN. ZC  
 SCALE .0100

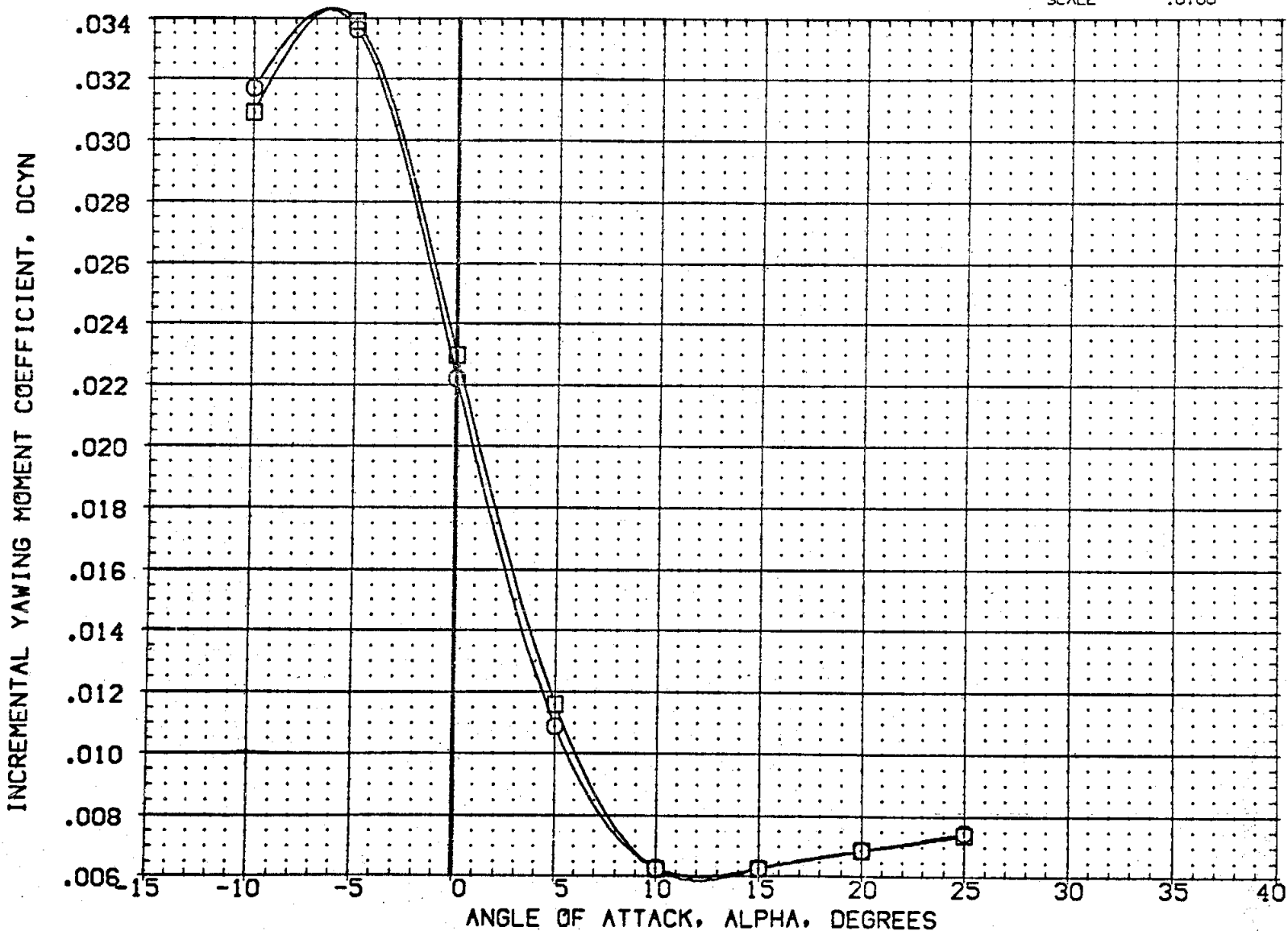


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION	
(ZH227N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-20.000	446.000	7.000	.000	SREF 2690.0000 SQ.FT.
(ZH226N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	7.000	.000	LREF 474.8100 IN.
(ZH206F)	0A105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-20.000	.000	.000	.000	BREF 936.6800 IN.
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	.000	XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

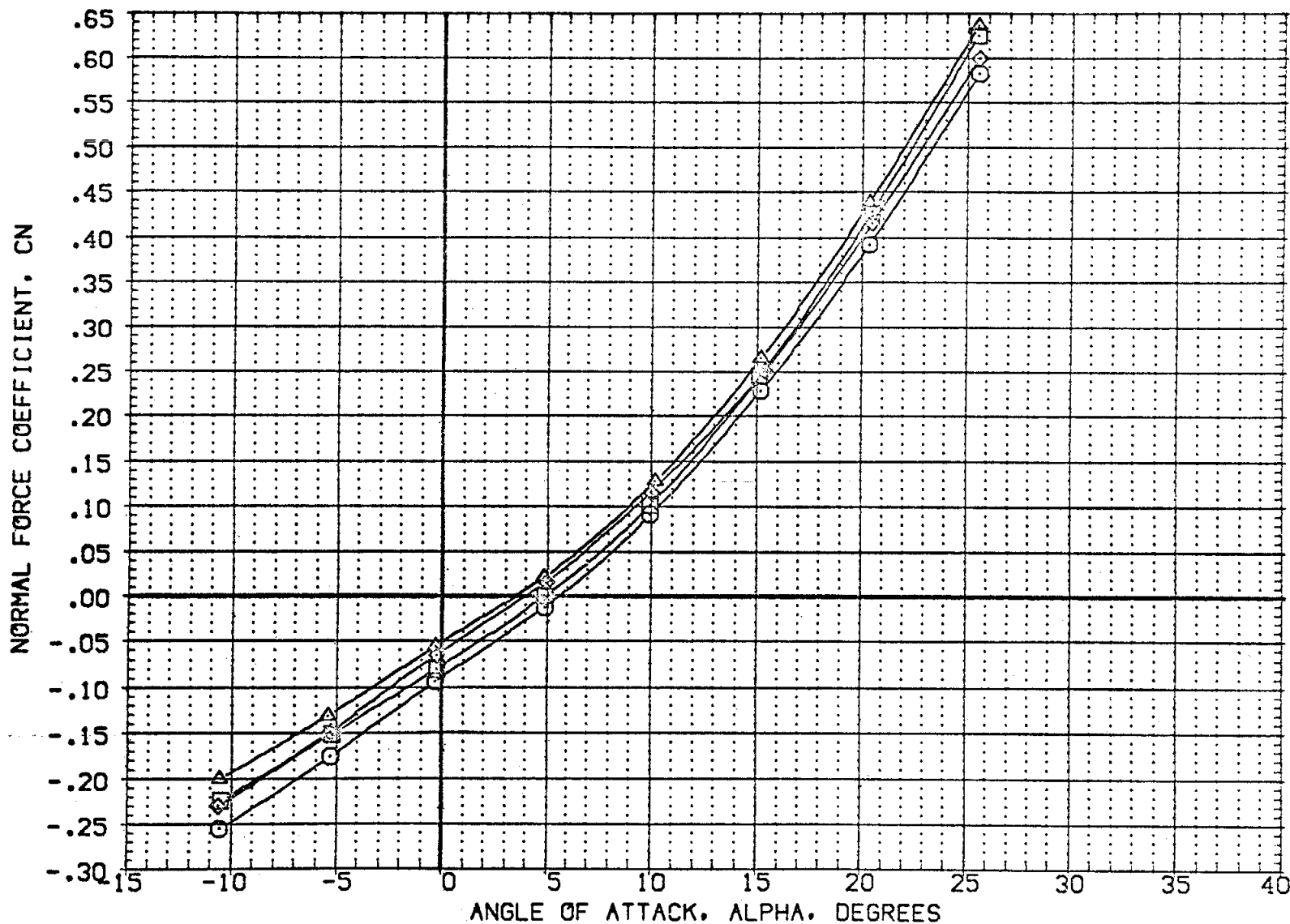


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON	PCRCS	Q-SIM	BDFLAP	REFERENCE INFORMATION		
(ZH227N)	□	0A105 CFHT109 MODEL 32-0 (0)NS2	PITCH UP	-20.000	446.000	7.000	.000	SREF	2690.0000	SQ. FT.
(ZH226N)	□	0A105 CFHT109 MODEL 32-0 (0)NS2	PITCH UP	.000	446.000	7.000	.000	LREF	474.8100	IN.
(ZH206F)	◇	0A105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-20.000	.000	.000	.000	BREF	936.6800	IN.
(ZH203F)	△	0A105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	.000	XMRP	1076.6700	IN. X0
								YMRP	.0000	IN. Y0
								ZMRP	375.0000	IN. Z0
								SCALE	.0100	

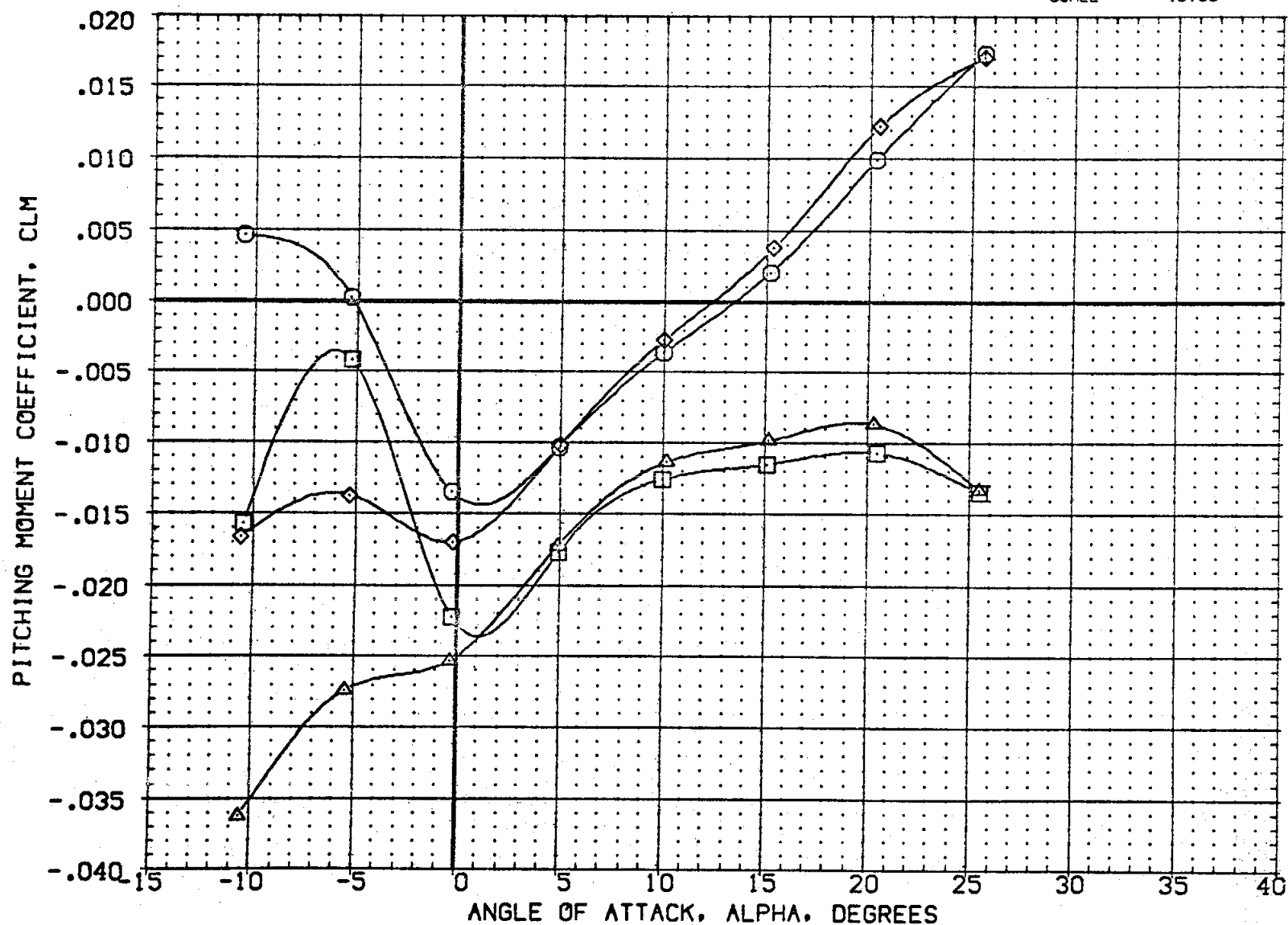


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BD FLAP	REFERENCE INFORMATION		
(ZH227N)	DA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-20.000	446.000	7.000	.000	SREF	2690.0000 SQ.FT.
(ZH226N)	DA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	7.000	.000	LREF	474.8100 IN.
(ZH206F)	DA105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-20.000	.000	.000	.000	BREF	936.6800 IN.
(ZH203F)	DA105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	.000	XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

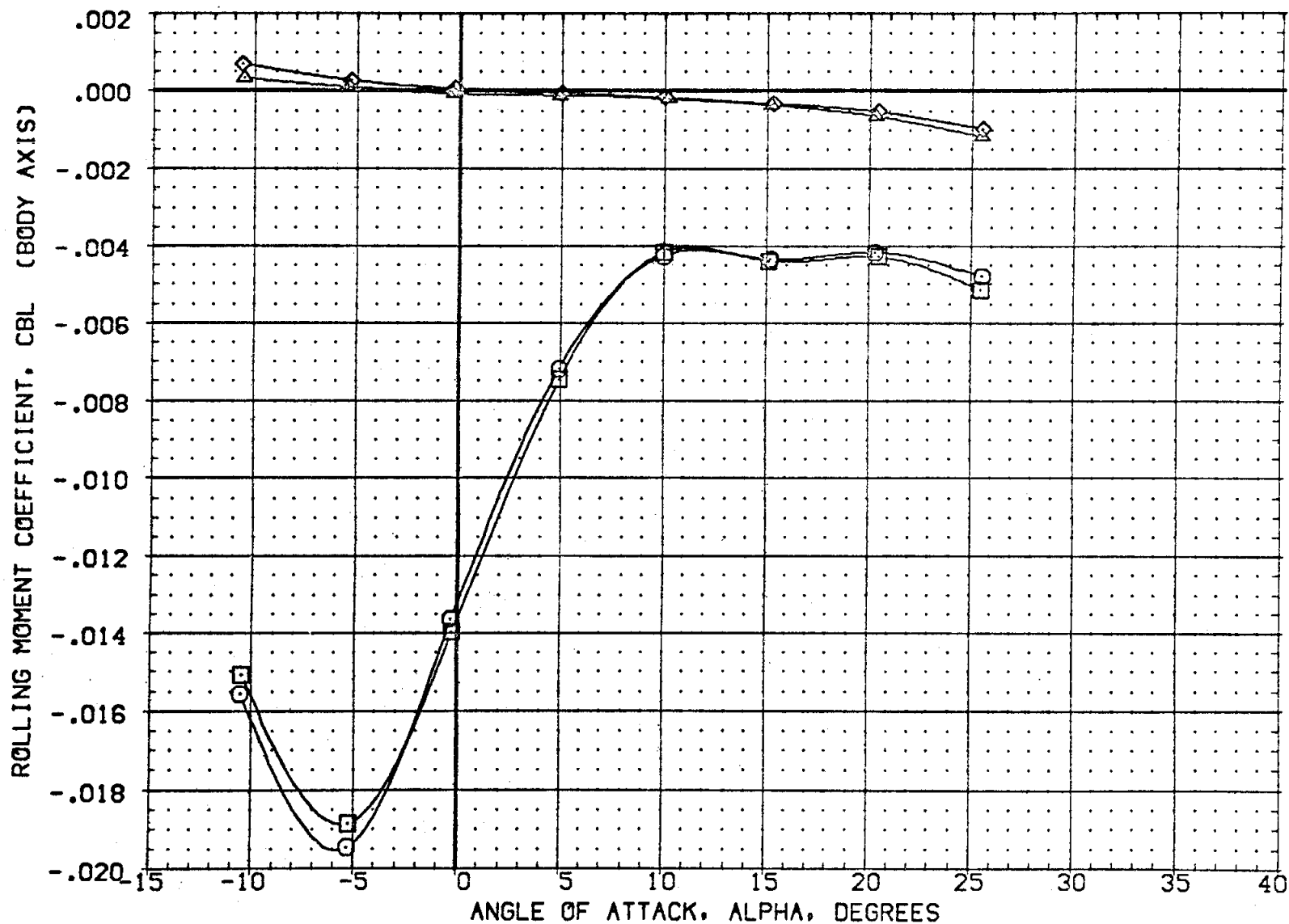


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION
(ZH227N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-20.000	446.000	7.000	.000 SREF 2690.0000 SQ.FT.
(ZH226N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	7.000	.000 LREF 474.8100 IN.
(ZH206F)	0A105 CFHT109 MODEL 32 0(0) N52	RCS OFF	-20.000	.000	.000	.000 BREF 936.6800 IN.
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	.000	.000	.000	.000 XMRP 1076.6700 IN. X0
						.000 YMRP .0000 IN. Y0
						.000 ZMRP 375.0000 IN. Z0
						SCALE .0100

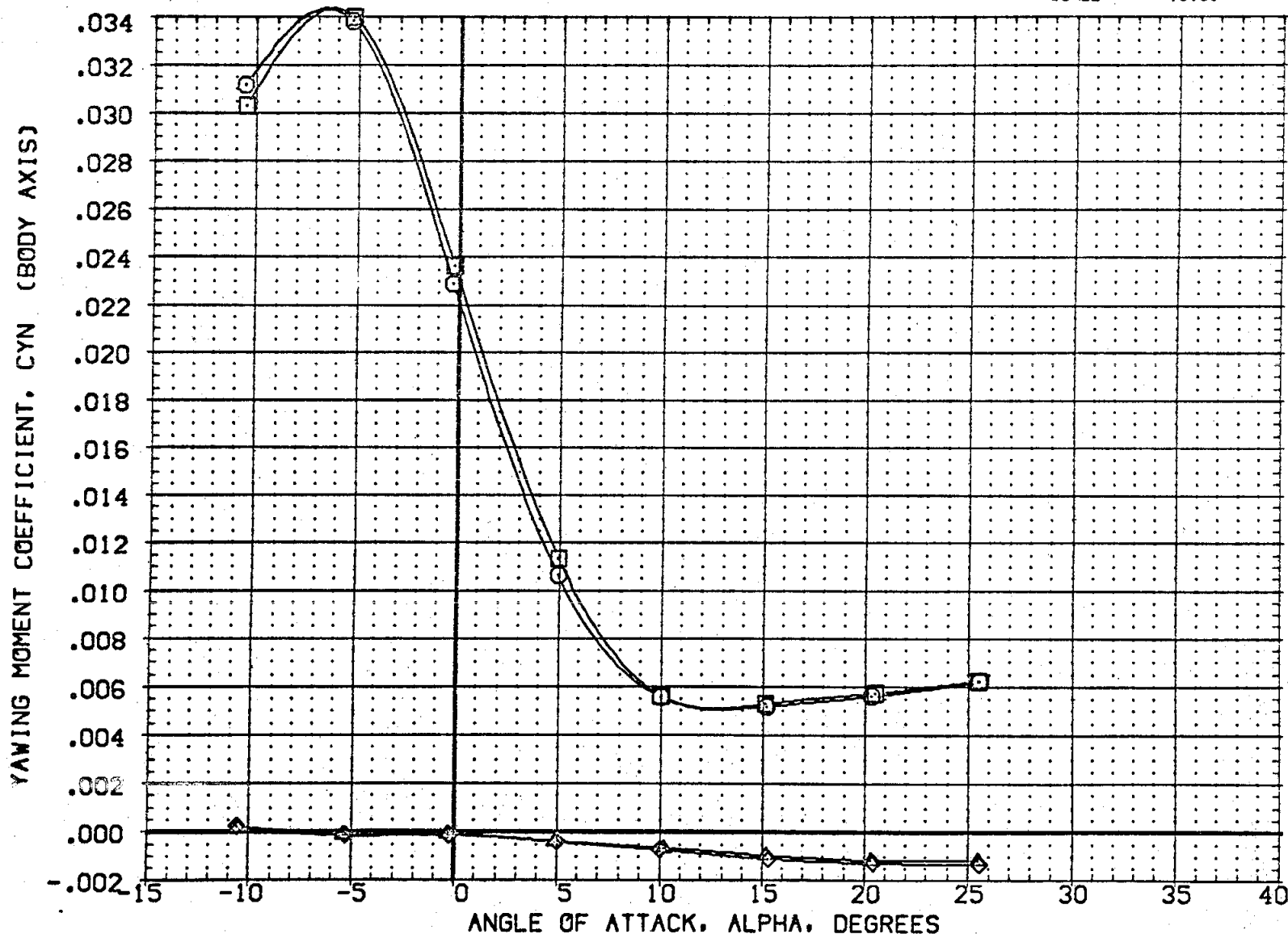


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION
(C01006)	OA-85 CFHT101 MODEL 32-0 0INS2 PITCH UP	-20.000	158.000	20.000	.000	SREF 2690.0000 SQ.FT.
(C01007)	OA-85 CFHT101 MODEL 32-0 0INS2 PITCH UP	.000	158.000	20.000	.000	LREF 474.8100 IN.
						BREF 936.6800 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100 IN.

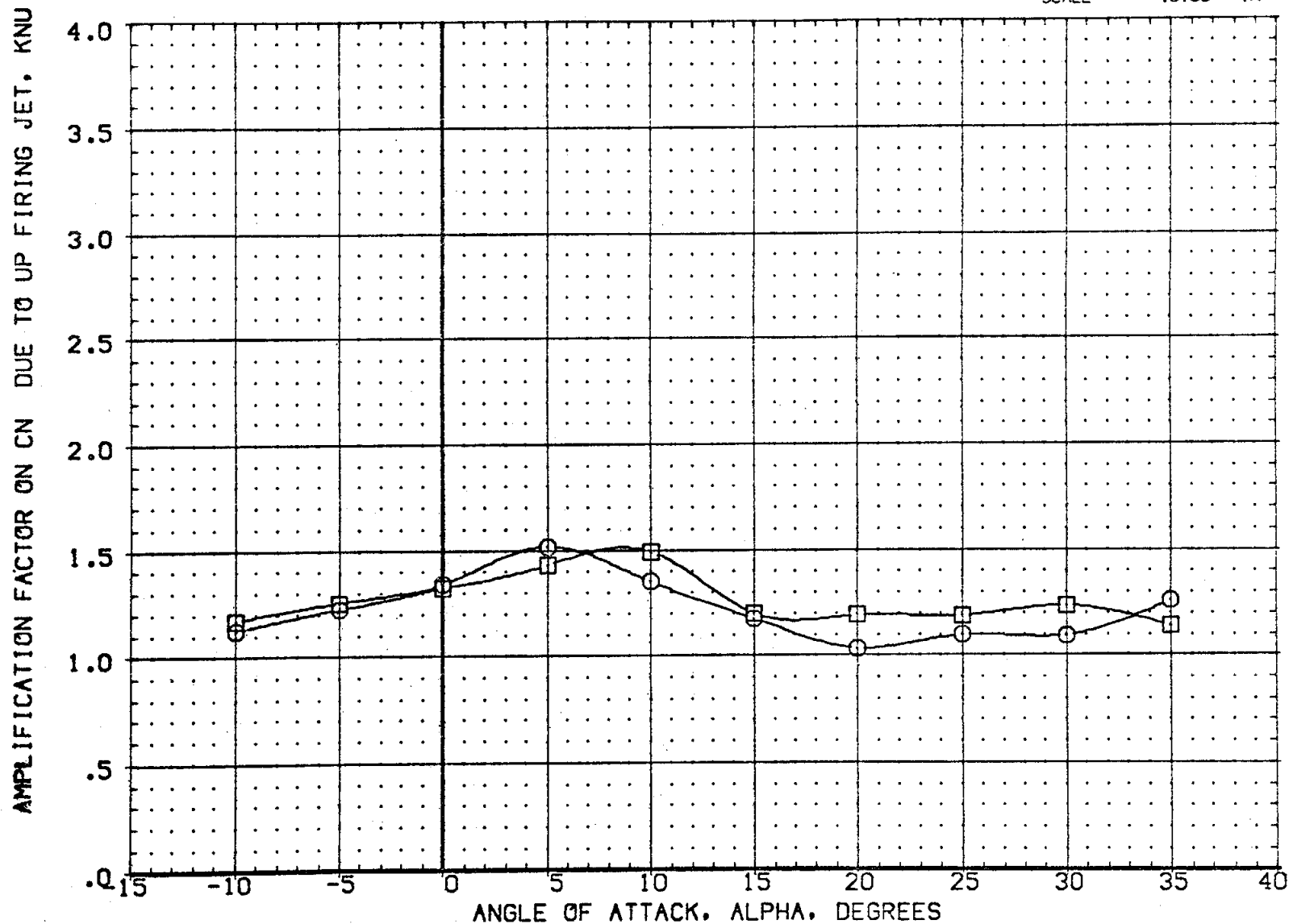


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CQ1006)  $\square$  OA-85 CFHT10; MODEL 32-0 01N52 PITCH UP  
 (CQ1007)  $\square$  OA-85 CFHT10; MODEL 32-0 01N52 PITCH UP

ELEVON	PCRC5	Q-SIM	BOFLAP	REFERENCE INFORMATION		
-20.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
.000	158.000	20.000	.000	LREF	474.8100	IN.
				BREF	936.6800	IN.
				XMRP	1076.6700	IN. XC
				YMRP	.0000	IN. YC
				ZMRP	375.0000	IN. ZC
				SCALE	.0100	IN

AMPLIFICATION FACTOR ON CLM DUE TO UP FIRING JET, KLMU

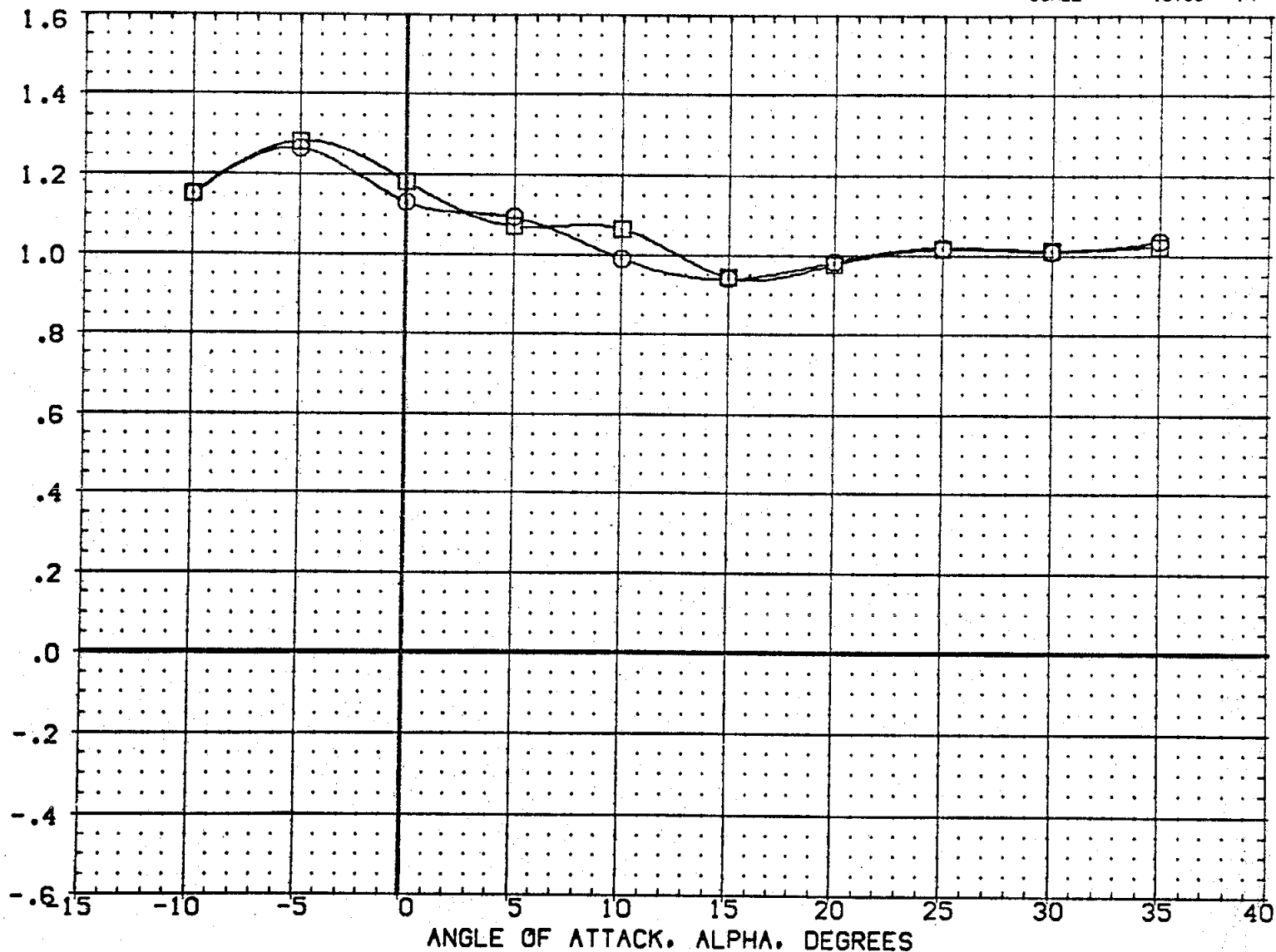




FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CQ1006)  0A-85 CFHT101 MODEL 32-0 01N52 PITCH UP  
(CQ1007)  0A-85 CFHT101 MODEL 32-0 01N52 PITCH UP

ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
-20.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
.000	158.000	20.000	.000	LREF	474.8100	IN.
				BREF	936.6900	IN.
				XMRP	1076.6700	IN. X0
				YMRP	.0000	IN. Y0
				ZMRP	375.0000	IN. Z0
				SCALE	.0100	IN.

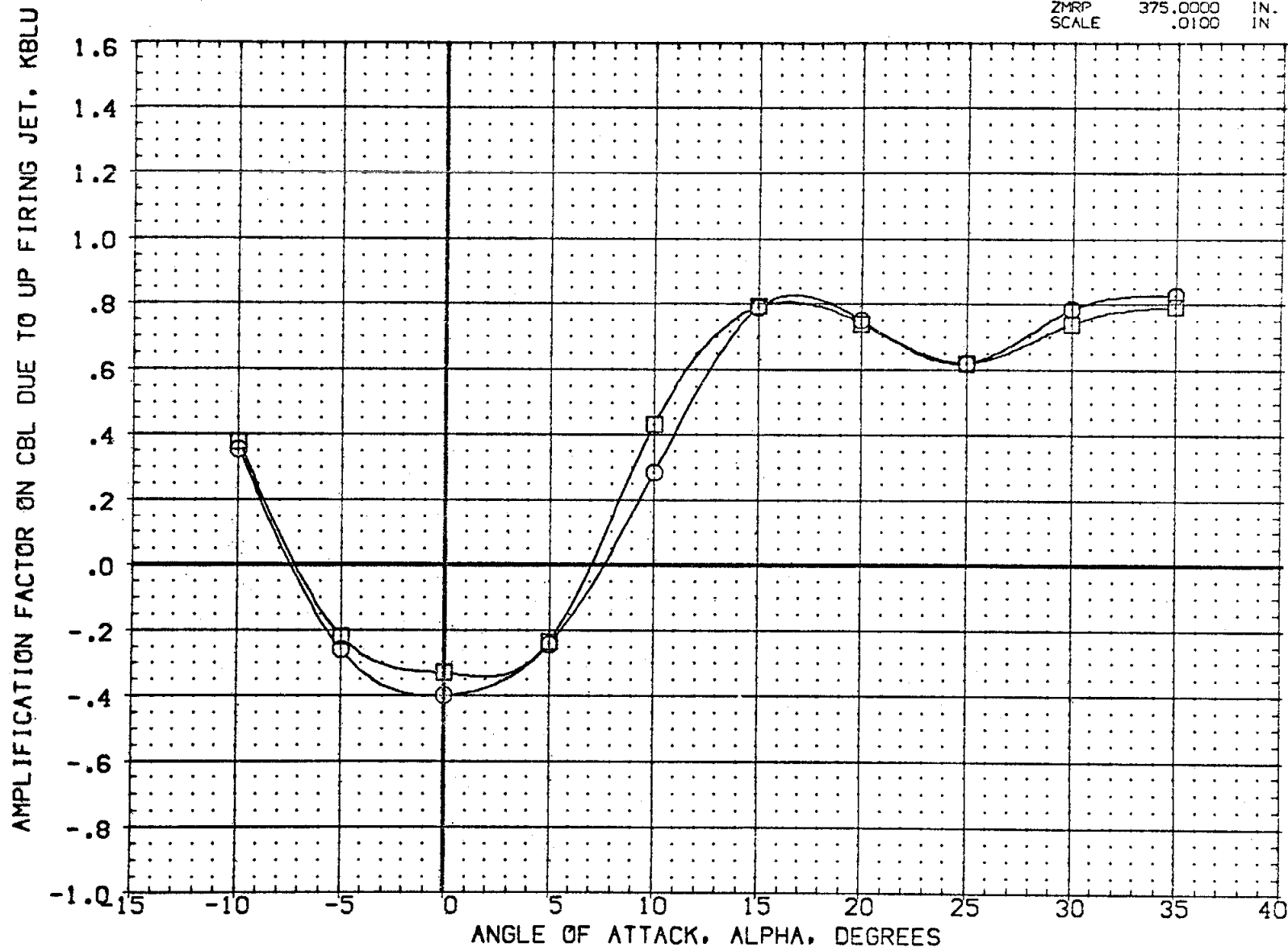


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(C01006)  $\square$  OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP  
(C01007)  $\square$  OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP

ELEVON PCRC5 Q-SIM BOFLAP  
-20.000 158.000 20.000 .000  
.000 158.000 20.000 .000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100 IN

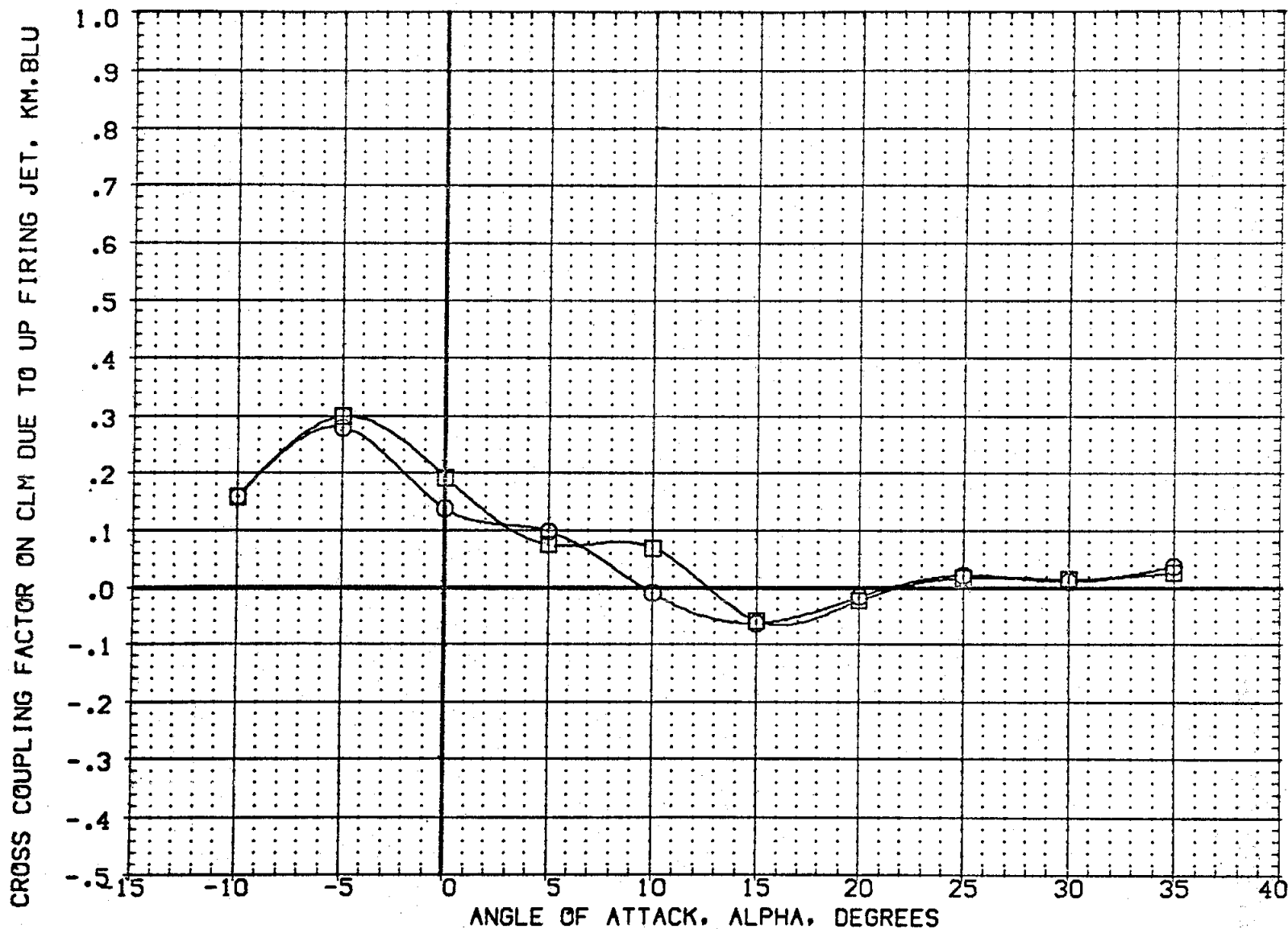


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (C01006) ☐ 0A-85 CFHT101 MODEL 32-0 01N52  
 (C01007) ☐ 0A-85 CFHT101 MODEL 32-0 01N52

PITCH UP  
 PITCH UP

ELEVON PCRC5 0-SIM BDFLAP  
 -20.000 158.000 20.000 .000  
 .000 158.000 20.000 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100 IN

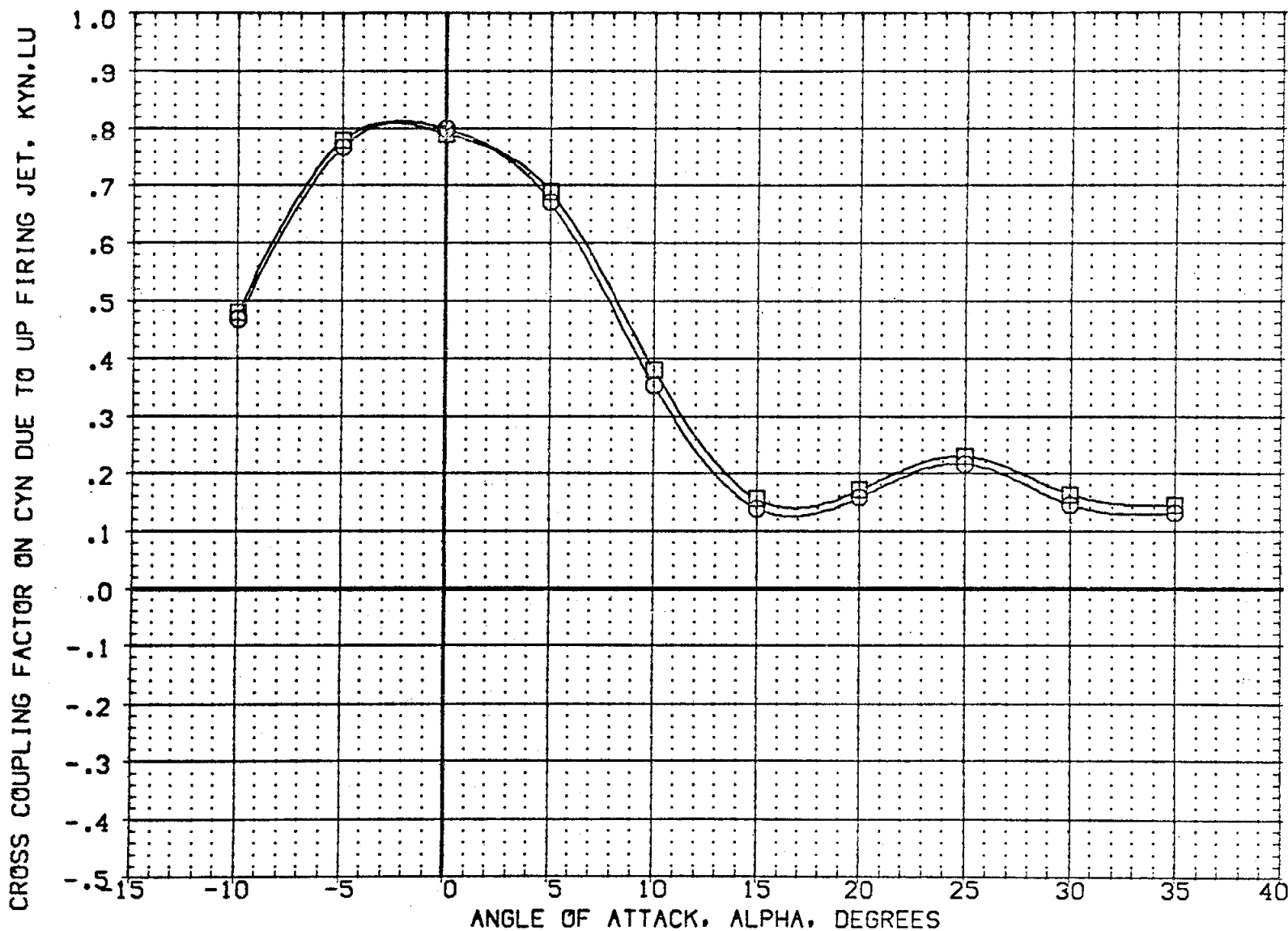


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(C01006)  $\square$  OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP  
(C01007)  $\square$  OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP

ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
-20.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
.000	158.000	20.000	.000	LREF	474.8100	IN.
				BREF	936.6800	IN.
				XMRP	1076.6700	IN. X0
				YMRP	.0000	IN. Y0
				ZMRP	375.0000	IN. Z0
				SCALE	.0100	IN.

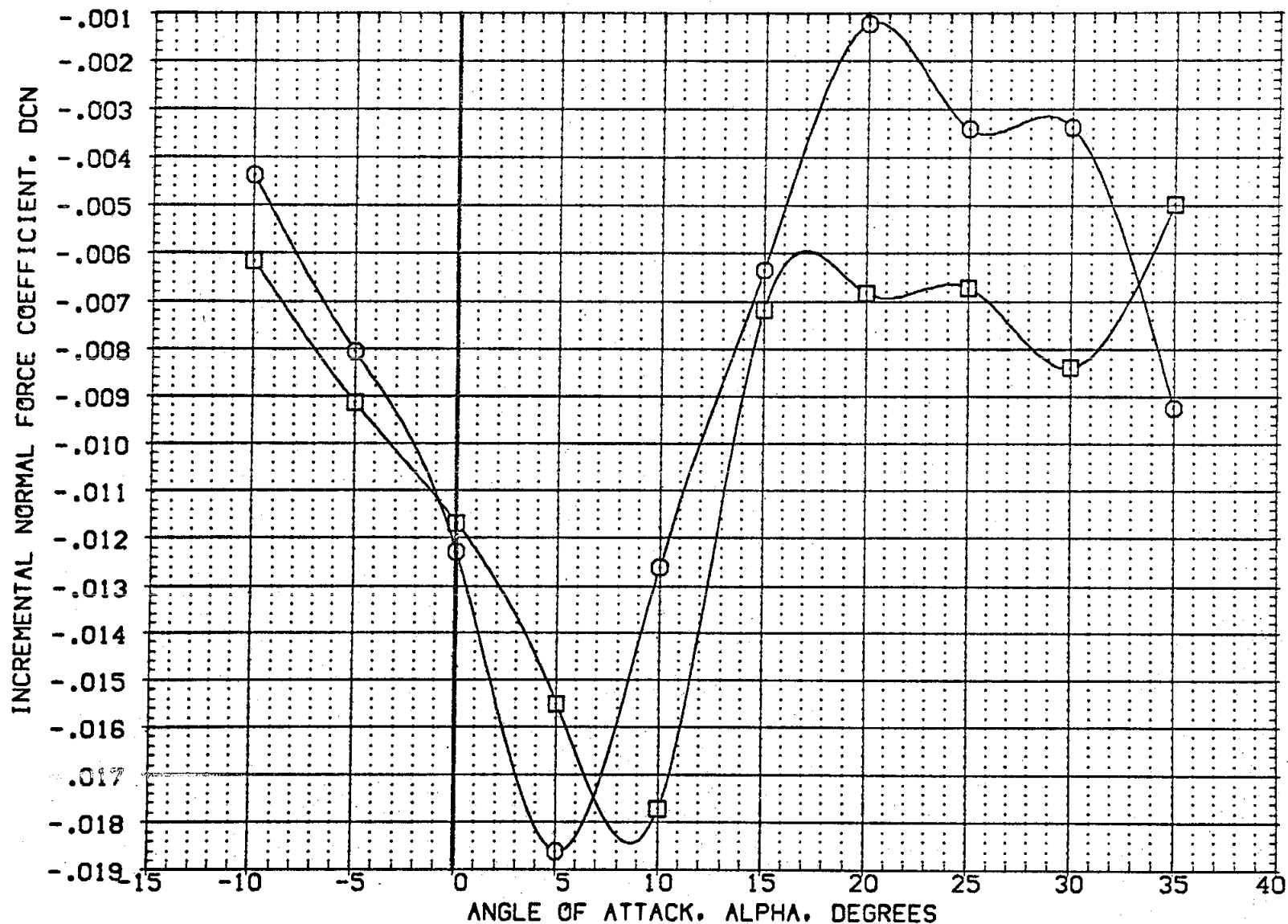




FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(C01006)  OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP  
(C01007)  OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP

ELEVON	PCRC5	Q-SIM	BOFLAP	REFERENCE INFORMATION		
-20.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
.000	158.000	20.000	.000	LREF	474.8100	IN.
				BREF	936.6800	IN.
				XMRP	1076.6700	IN. XO
				YMRP	.0000	IN. YO
				ZMRP	375.0000	IN. ZO
				SCALE	.0100	IN.

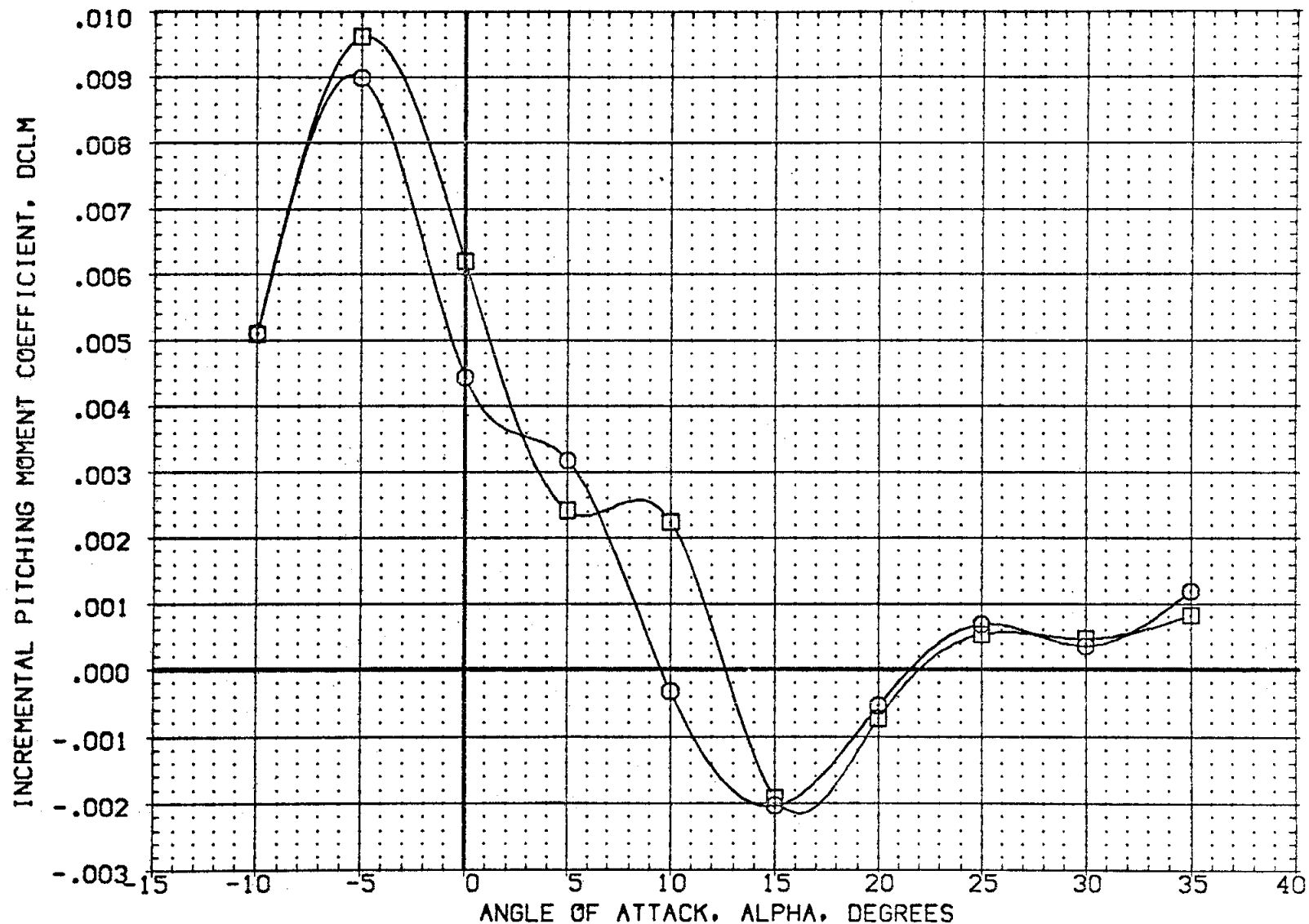


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(C01006)	OA-85 CFT101 MODEL 32-0 01N52	-20.000	158.000	20.000	.000	SREF	2690.0000	SO.FT.
(C01007)	OA-85 CFT101 MODEL 32-0 01N52	.000	20.000	.000	LREF	474.8100	IN.	
						BREF	936.6800	IN.
						XMRP	1076.6700	IN. XC
						YMRP	.0000	IN. YC
						ZMRP	375.0000	IN. ZC
						SCALE	.0100	IN.

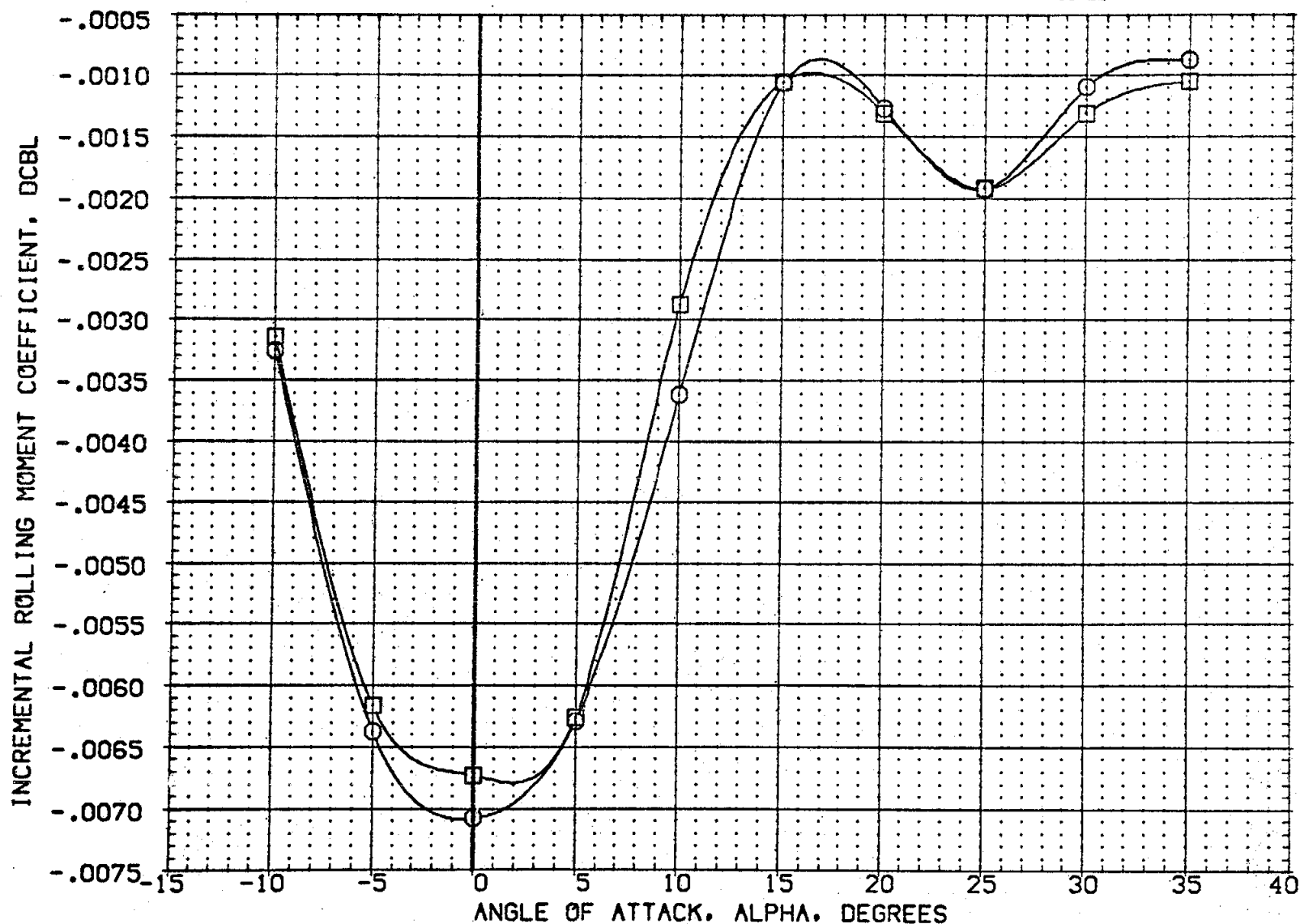


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC5	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(C01006)	QA-85 CFHT101 MODEL 32-0 01N52	-20.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
(C01007)	QA-85 CFHT101 MODEL 32-0 01N52	.000	158.000	20.000	.000	LREF	474.8100	IN.
						BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	IN.

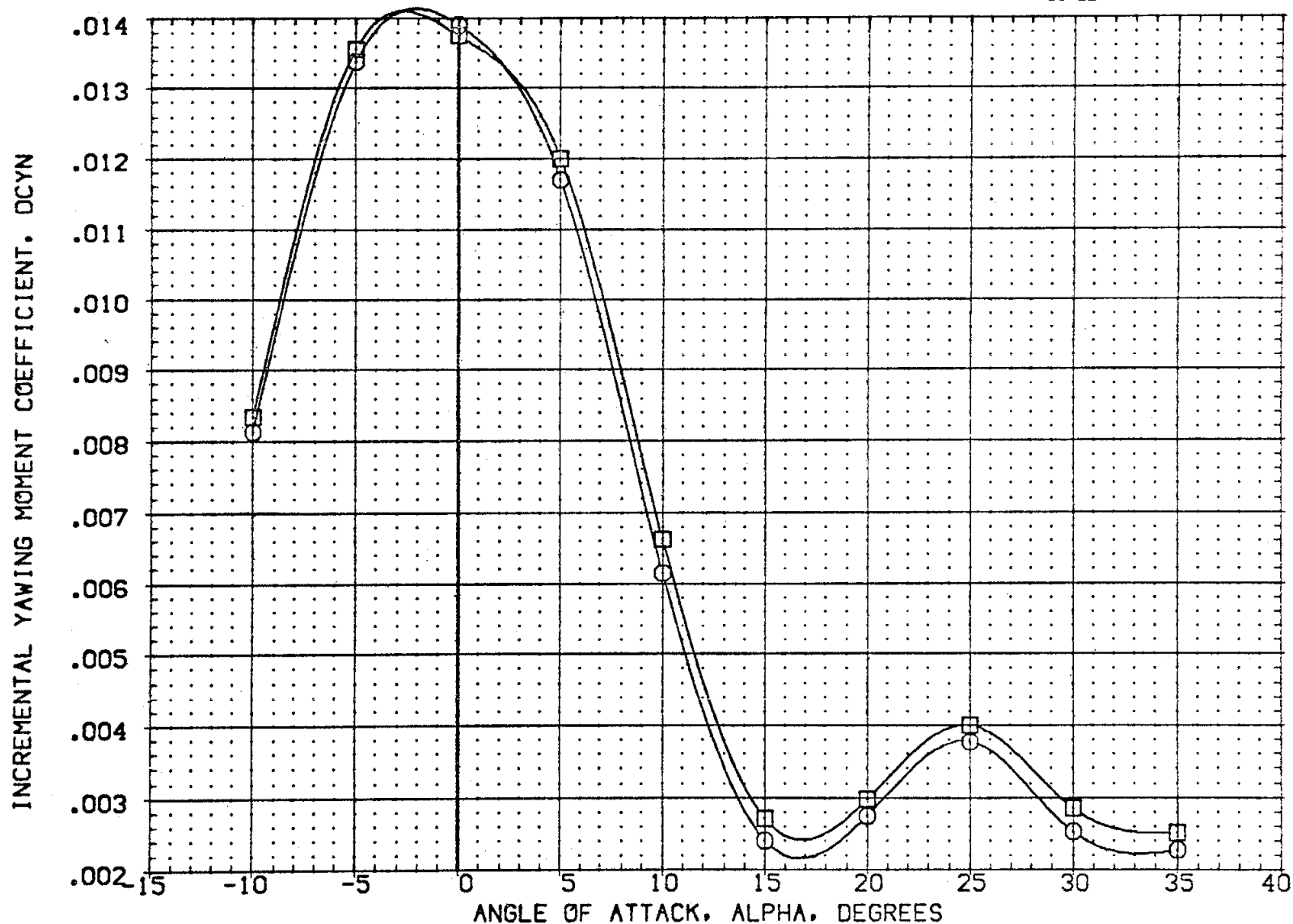


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRCS	Q-SIM	BDFLAP	REFERENCE INFORMATION
(Z0106N)	OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP	-20.000	158.000	20.000	.000	SREF 2690.0000 SQ.FT.
(Z0107N)	OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP	.000	158.000	20.000	.000	LREF 474.8100 IN.
(Z0102F)	OA-85 CFHT101 MODEL 32-0 01 N51 RCS OFF	-20.000	.000	.000	.000	BREF 936.6800 IN.
(Z0103F)	OA-85 CFHT101 MODEL 32-0 01 N52 RCS OFF	.000	.000	.000	.000	XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100 IN

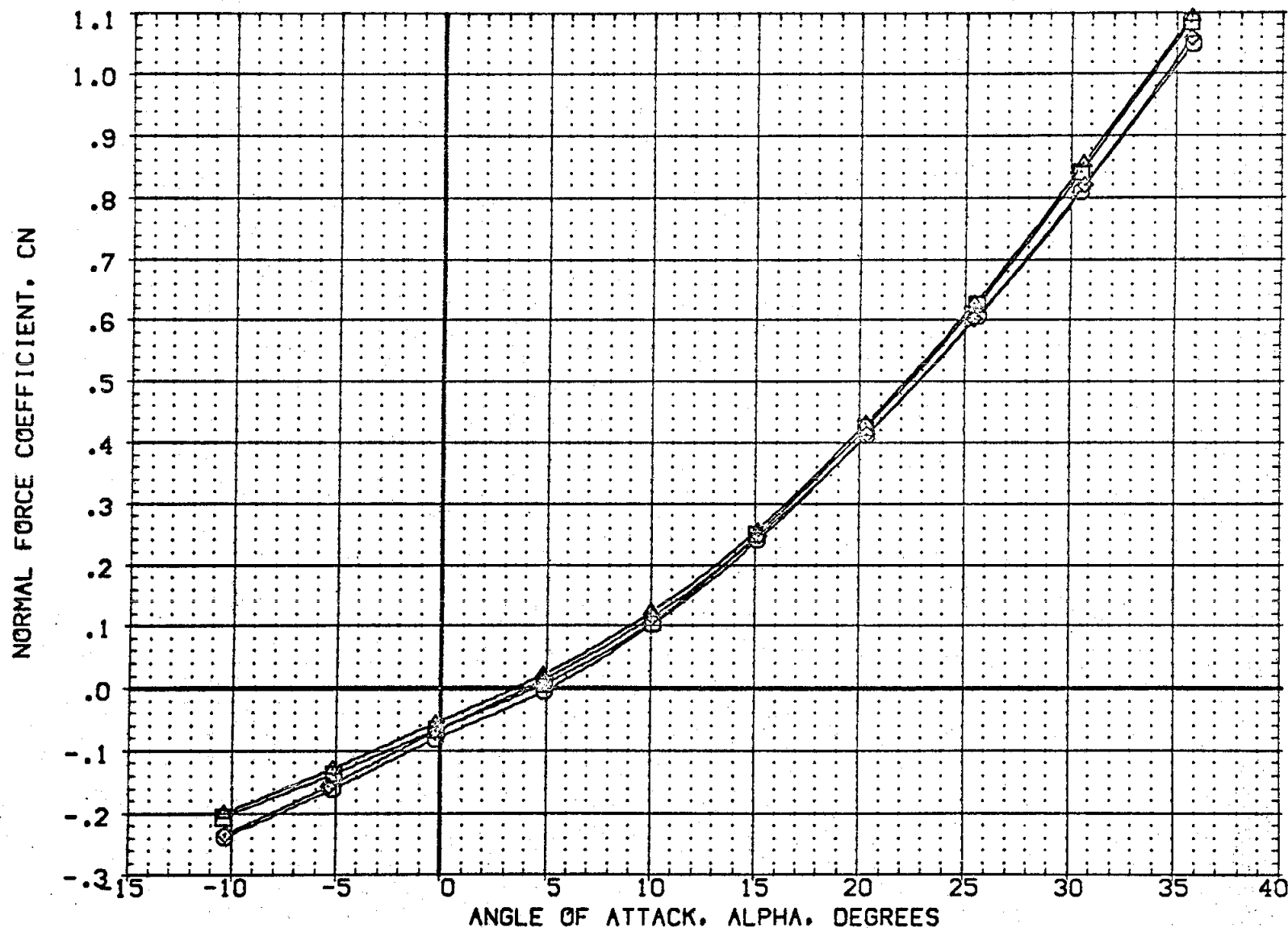


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(Z0106N)	OA-85 CFHT101 MODEL 32-0 01N52	PITCH UP	-20.000	158.000	20.000	.000	SREF	2690.0000 SQ.FT.
(Z0107N)	OA-85 CFHT101 MODEL 32-0 01N52	PITCH UP	.000	158.000	20.000	.000	LREF	474.8100 IN.
(Z0102F)	OA-85 CFHT101 MODEL 32-0 01 N51	RCS OFF	-20.000	.000	.000	.000	BREF	936.6800 IN.
(Z0103F)	OA-85 CFHT101 MODEL 32-0 01 N52	RCS OFF	.000	.000	.000	.000	XMRF	1076.6700 IN. XO
							YMRP	.0000 IN. YO
							ZMRP	375.0000 IN. ZO
							SCALE	.0100 IN.

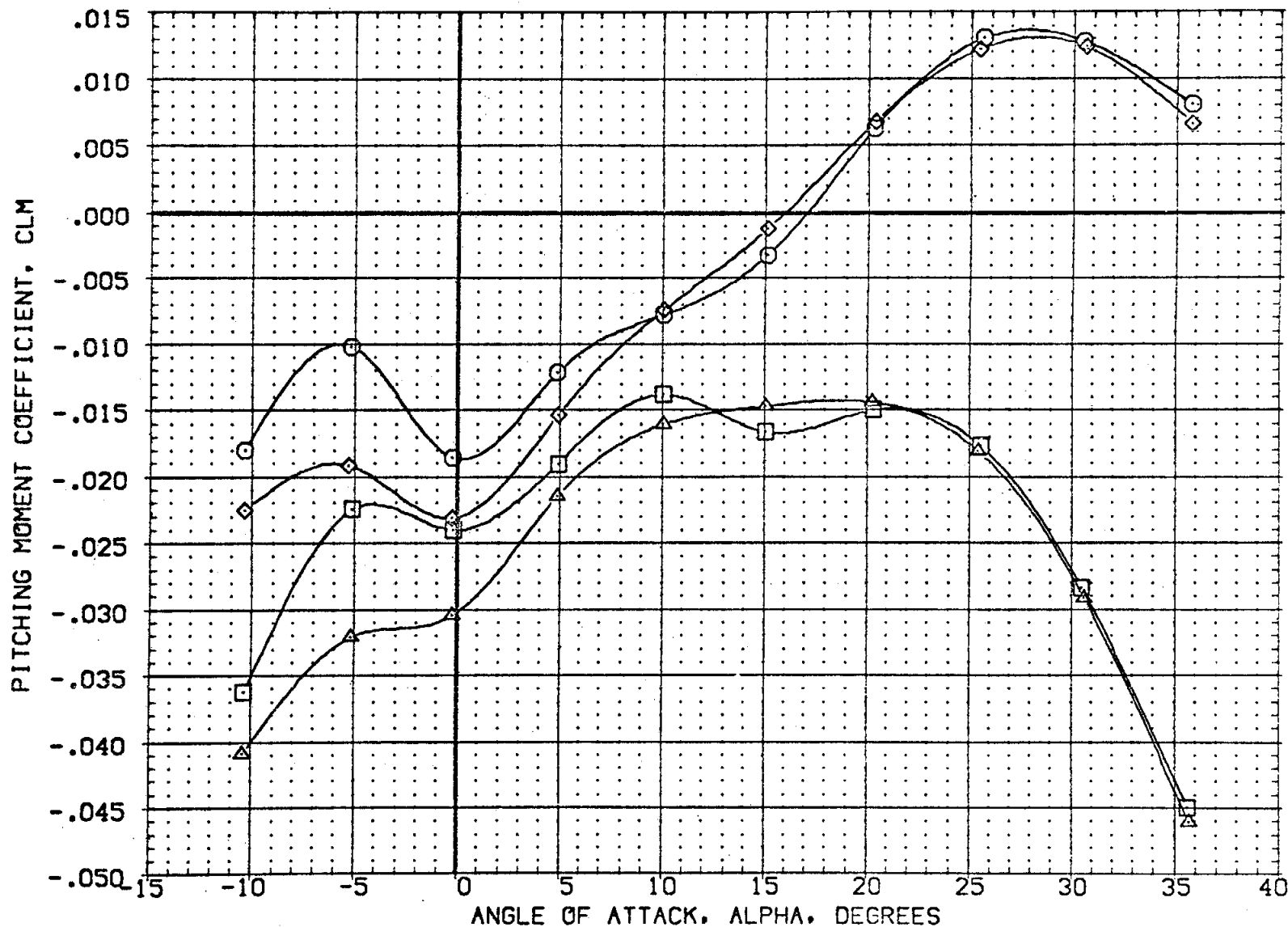


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(Z0106N)	OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP	-20.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
(Z0107N)	OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP	.000	158.000	20.000	.000	LREF	474.8100	IN.
(Z0102F)	OA-85 CFHT101 MODEL 32-0 01 N51 RCS OFF	-20.000	.000	.000	.000	BREF	936.6800	IN.
(Z0103F)	OA-85 CFHT101 MODEL 32-0 01 N52 RCS OFF	.000	.000	.000	.000	XMRP	1076.6700	IN. XO
						YMRP	.0000	IN. YO
						ZMRP	375.0000	IN. ZO
						SCALE	.0100	IN.

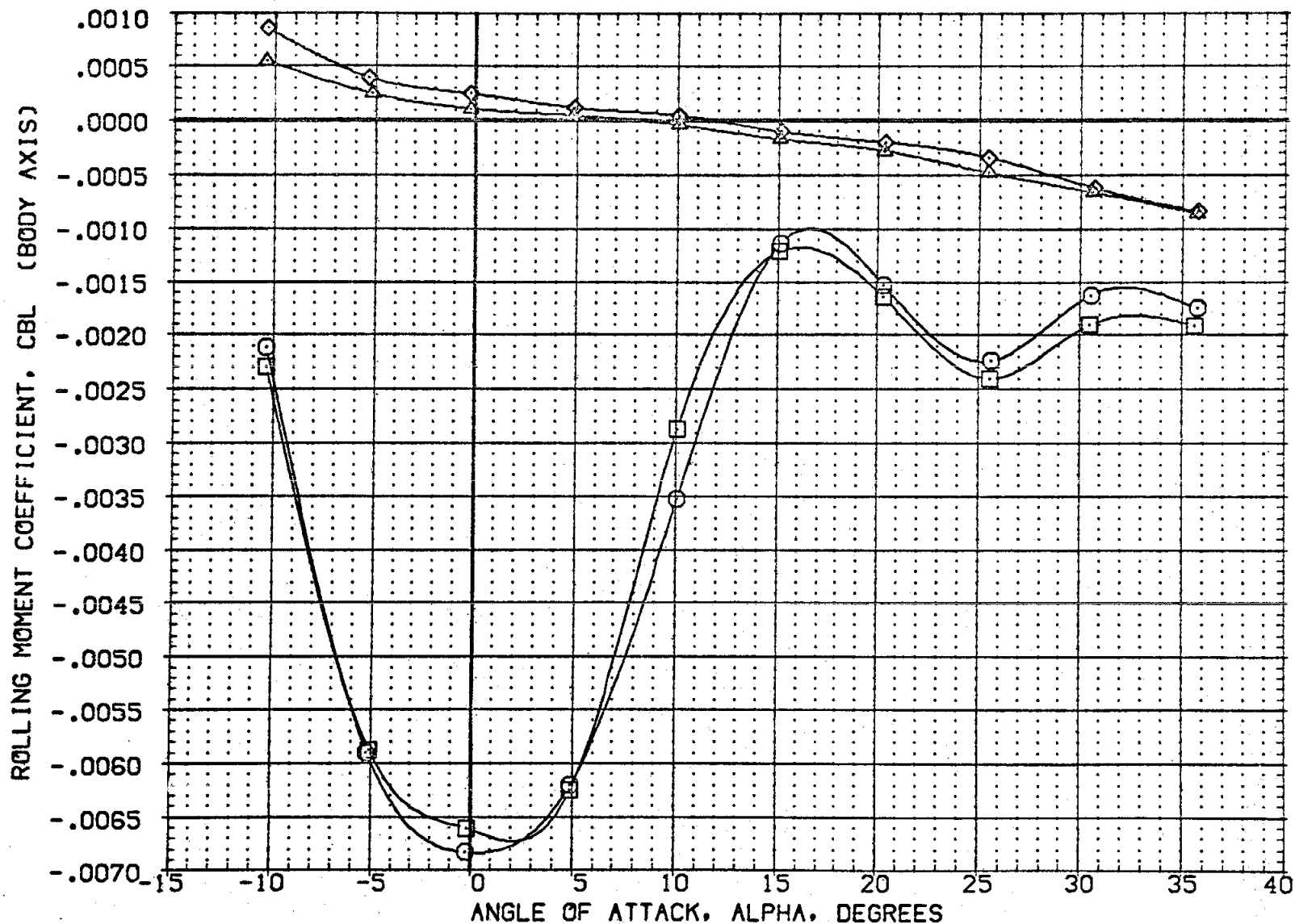


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION
(Z0106N)	OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP	-20.000	158.000	20.000	.000	SREF 2690.0000 SQ.FT.
(Z0107N)	OA-85 CFHT101 MODEL 32-0 01N52 PITCH UP	.000	158.000	20.000	.000	LREF 474.8100 IN.
(Z0102F)	OA-85 CFHT101 MODEL 32-0 01 N51 RCS OFF	-20.000	.000	.000	.000	BREF 936.6800 IN.
(Z0103F)	OA-85 CFHT101 MODEL 32-0 01 N52 RCS OFF	.000	.000	.000	.000	XMRF 1076.6700 IN. X0
						YMRF .0000 IN. Y0
						ZMRF 375.0000 IN. Z0
						SCALE .0100 IN.

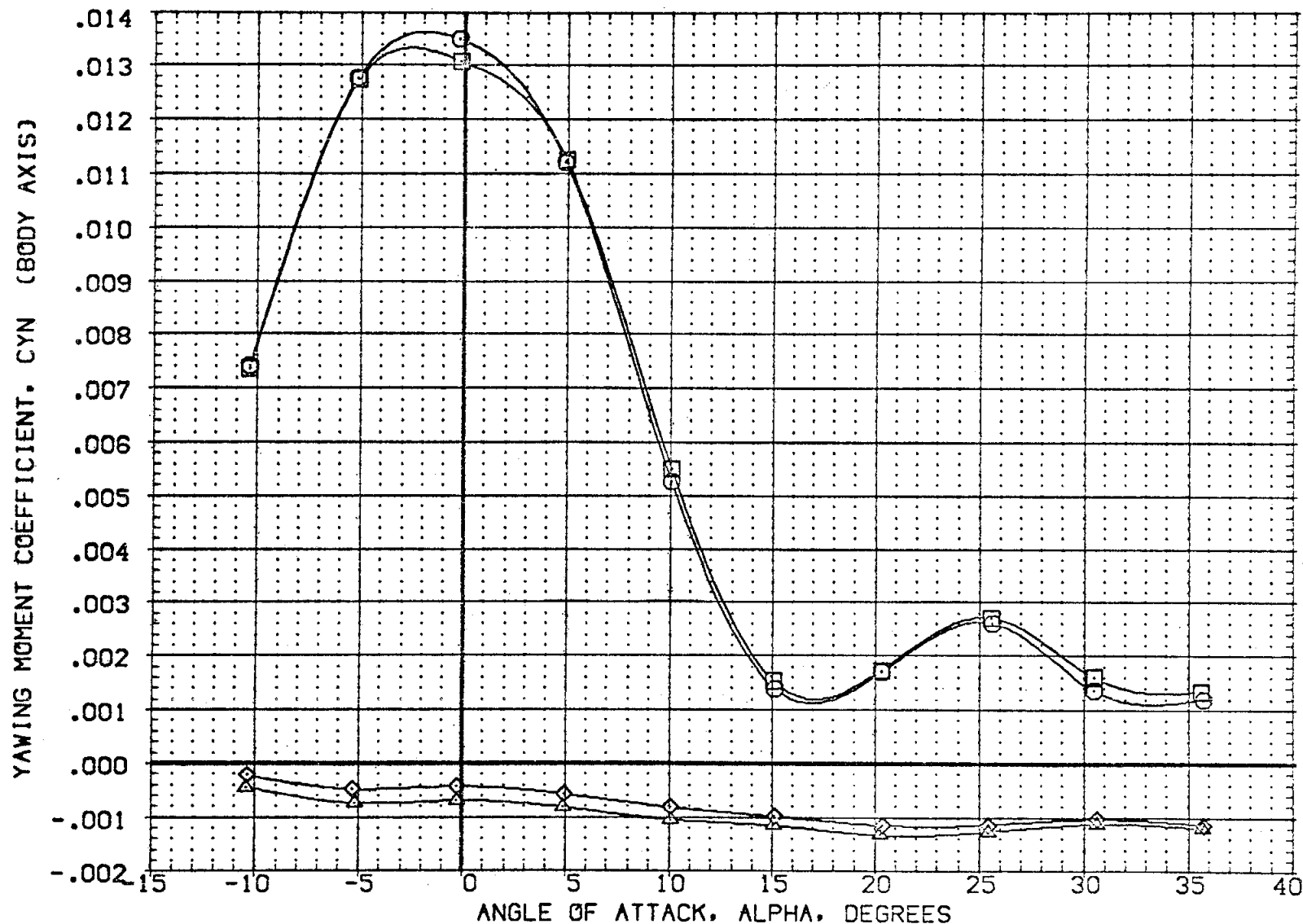


FIG 5 EFFECT OF ELEVON DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(CH2014)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(CH2026)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF 474.8100 IN.
(CH2012)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF 936.6800 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

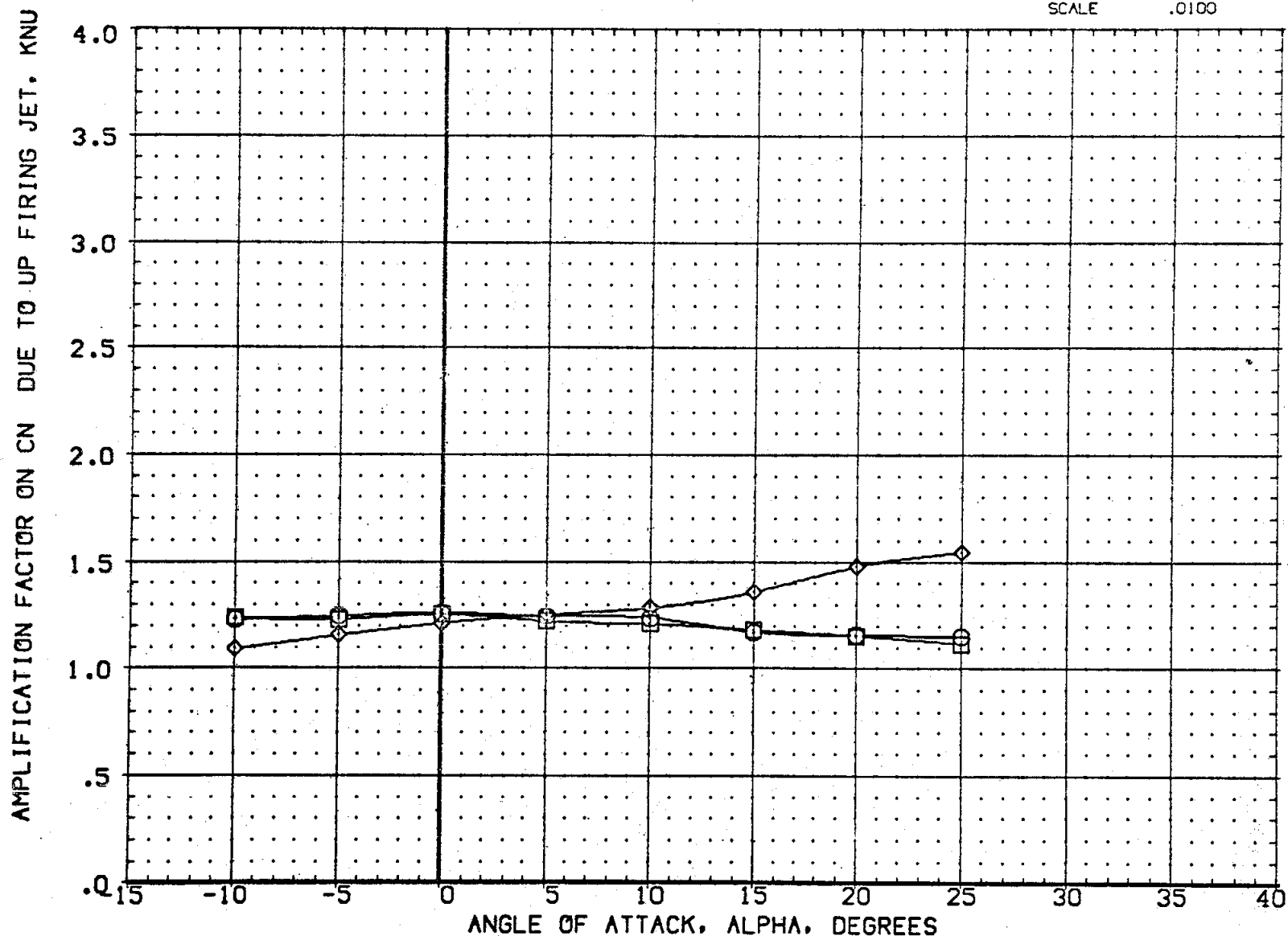


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2014)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF	2690.0000 SQ.FT.
(CH2026)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF	474.8100 IN.
(CH2012)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

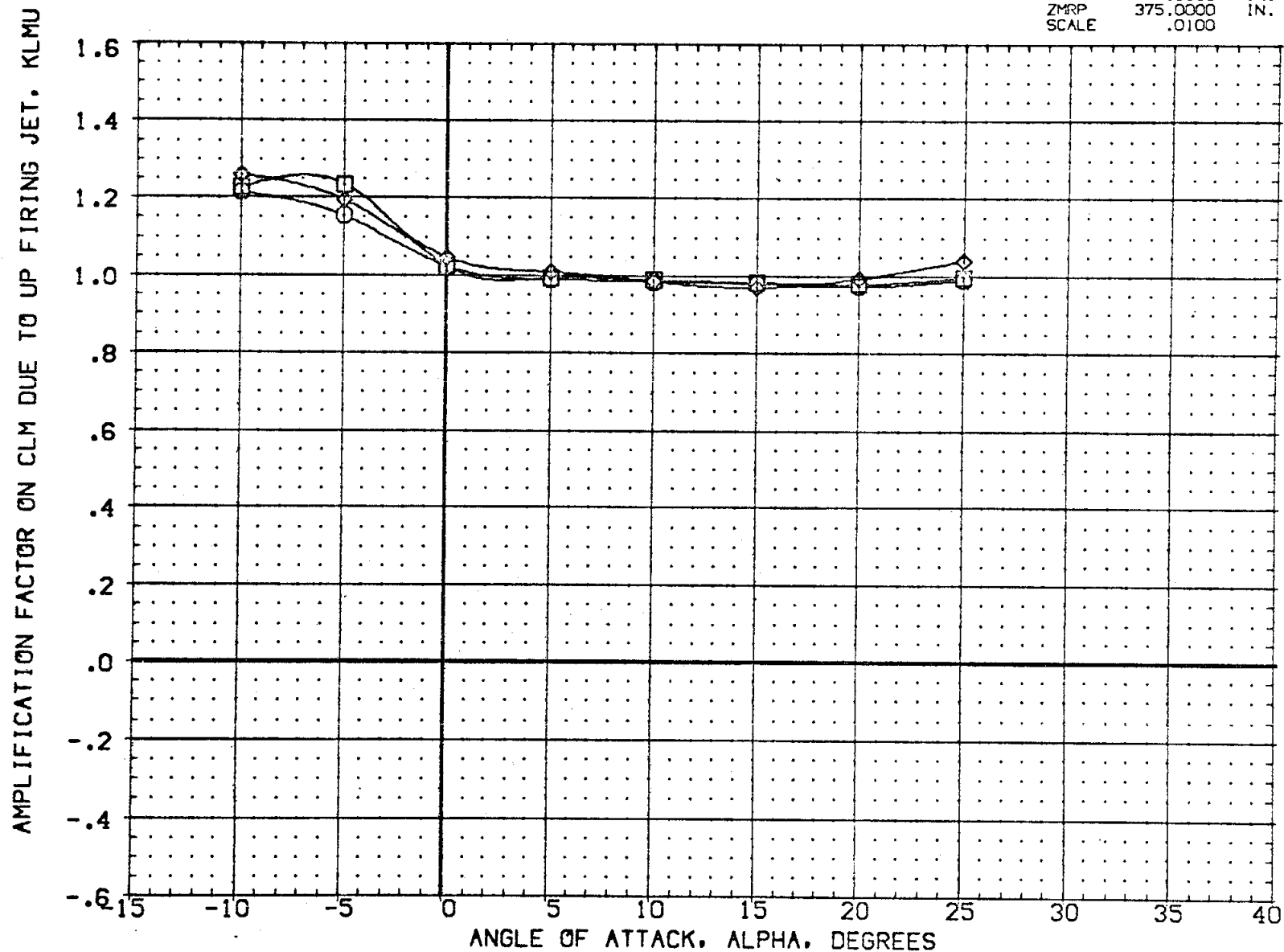


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2014)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF	2690.0000 SQ.FT.
(CH2026)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF	474.8100 IN.
(CH2012)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

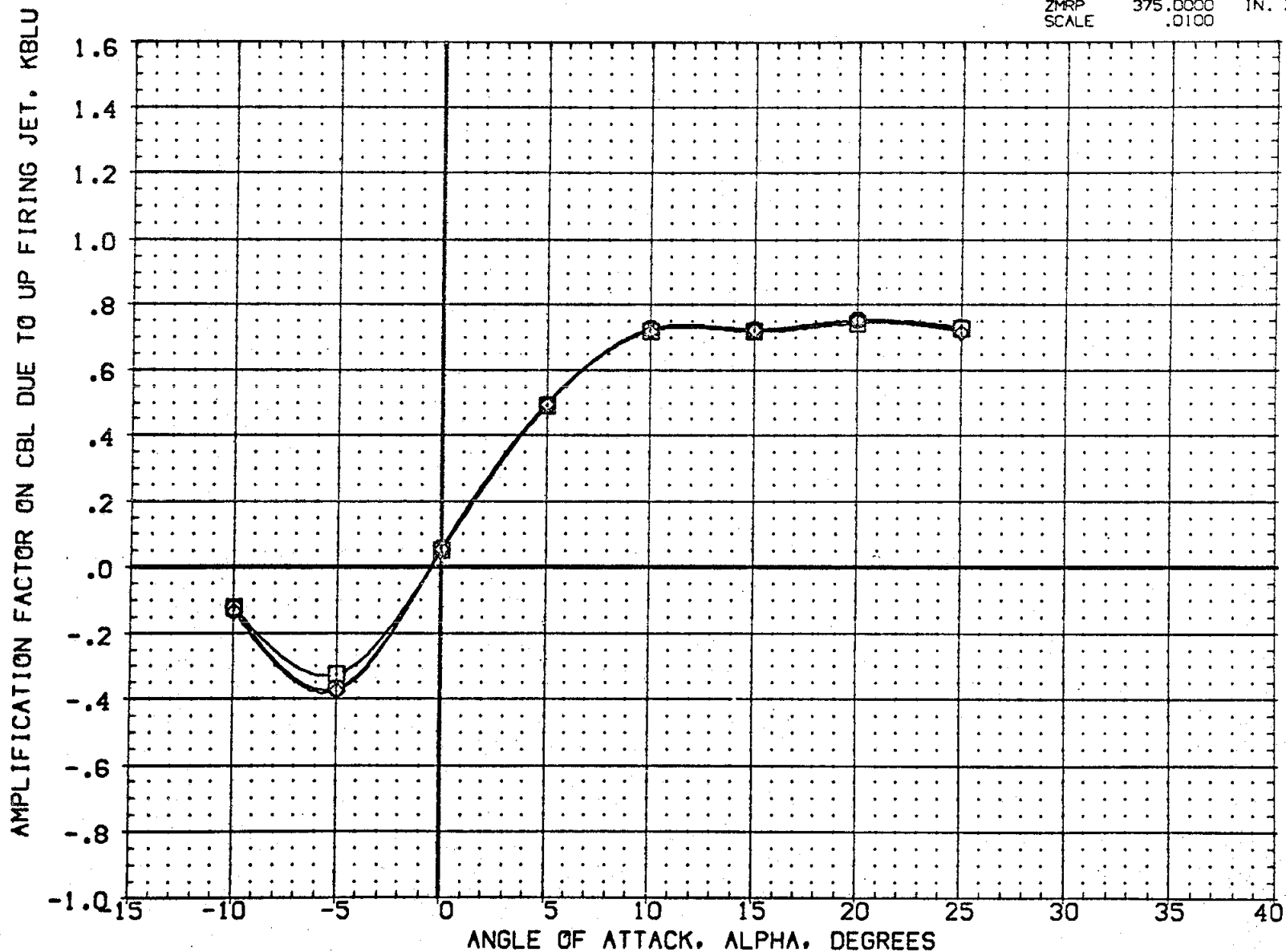


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2014)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(CH2026)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF 474.8100 IN.
(CH2012)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF 936.6800 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

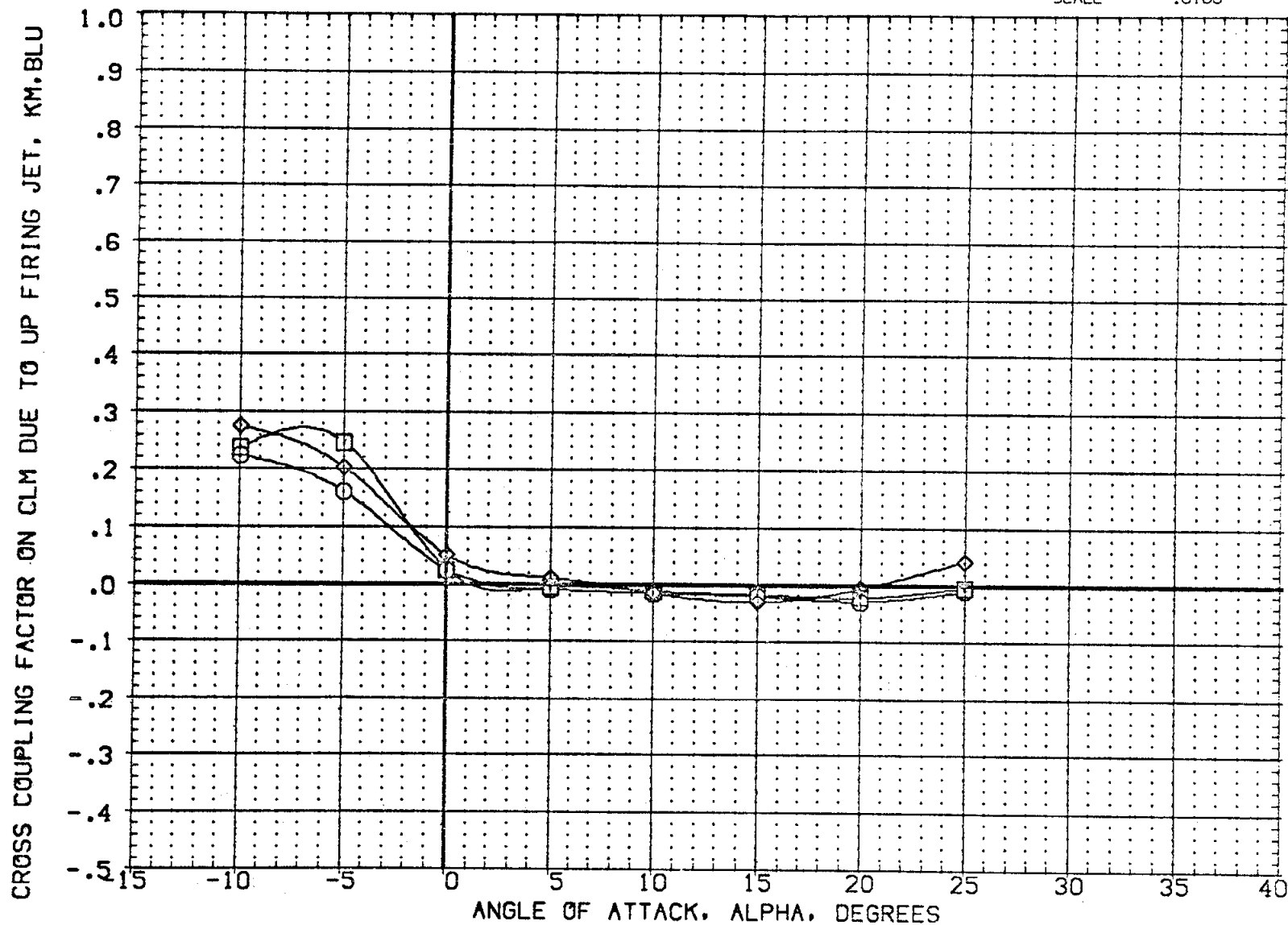


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2014)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(CH2026)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF 474.8100 IN.
(CH2012)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF 936.6800 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

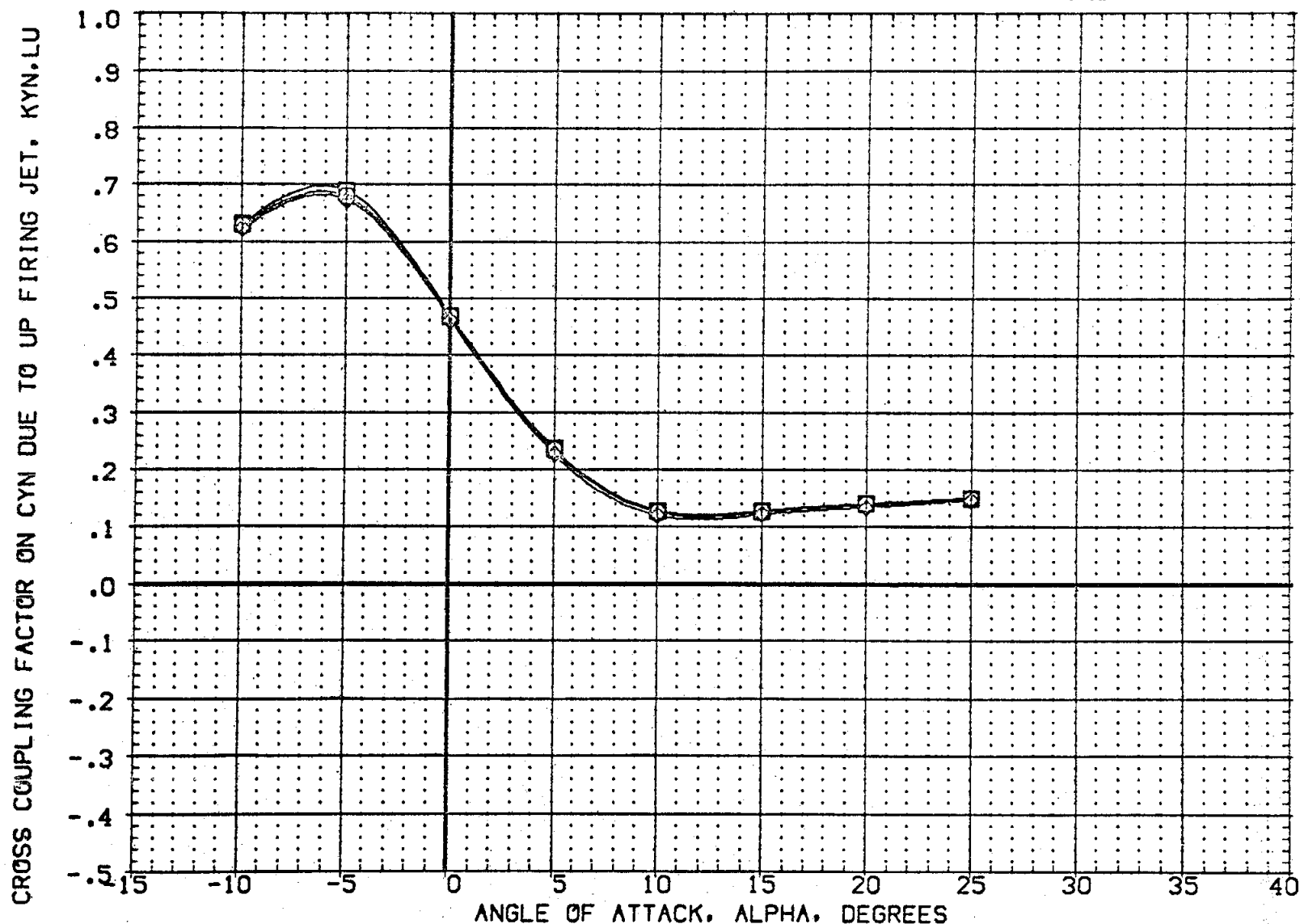


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2014)	□ OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF	2690.0000 SQ.FT.
(CH2026)	□ OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF	474.8100 IN.
(CH2012)	◇ OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF	936.6300 IN.
							XMRP	1076.6700 IN. XO
							YMRP	.0000 IN. YO
							ZMRP	375.0000 IN. ZO
							SCALE	.0100

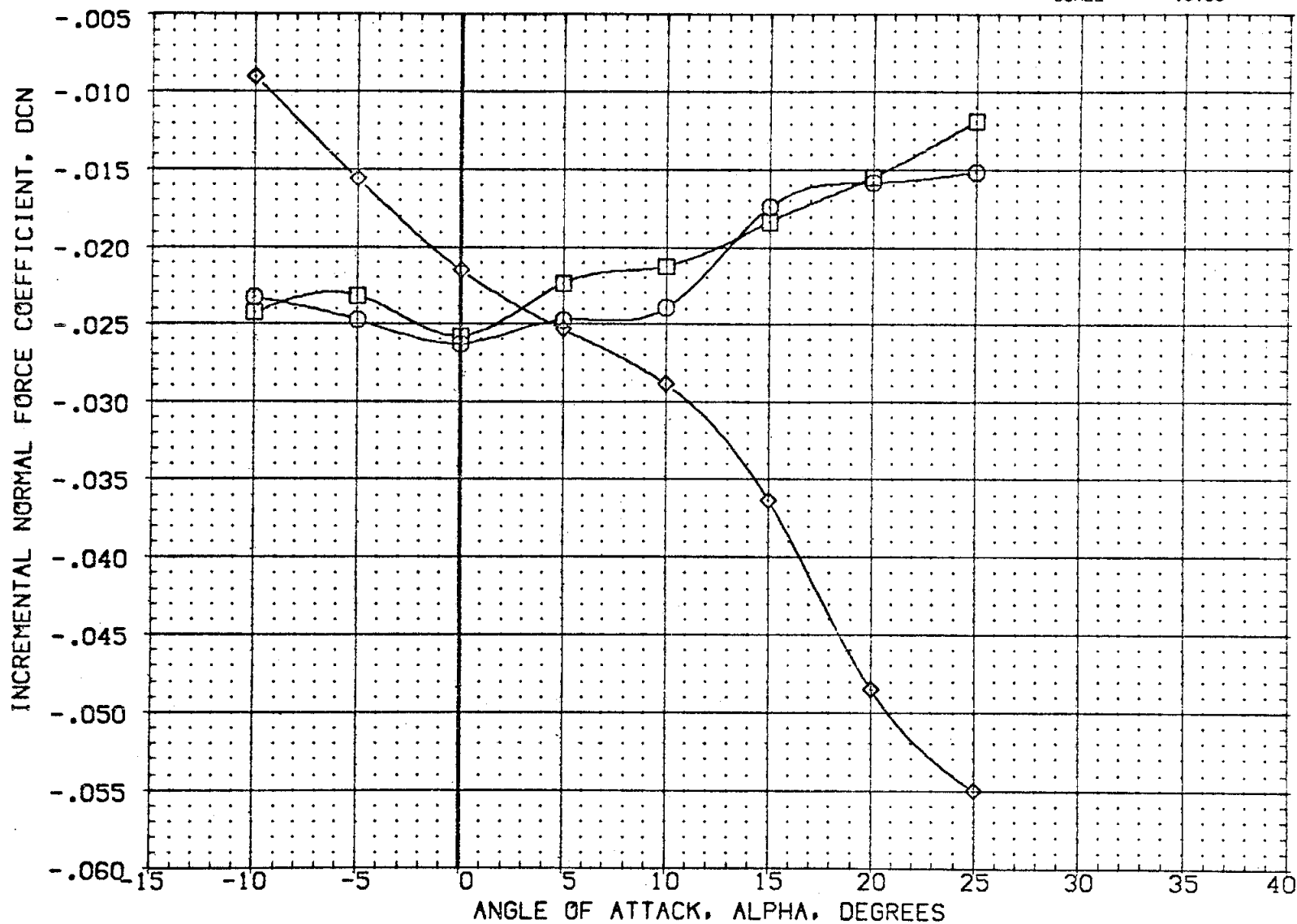


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(CH2014)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(CH2026)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF 474.8100 IN.
(CH2012)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF 936.6900 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

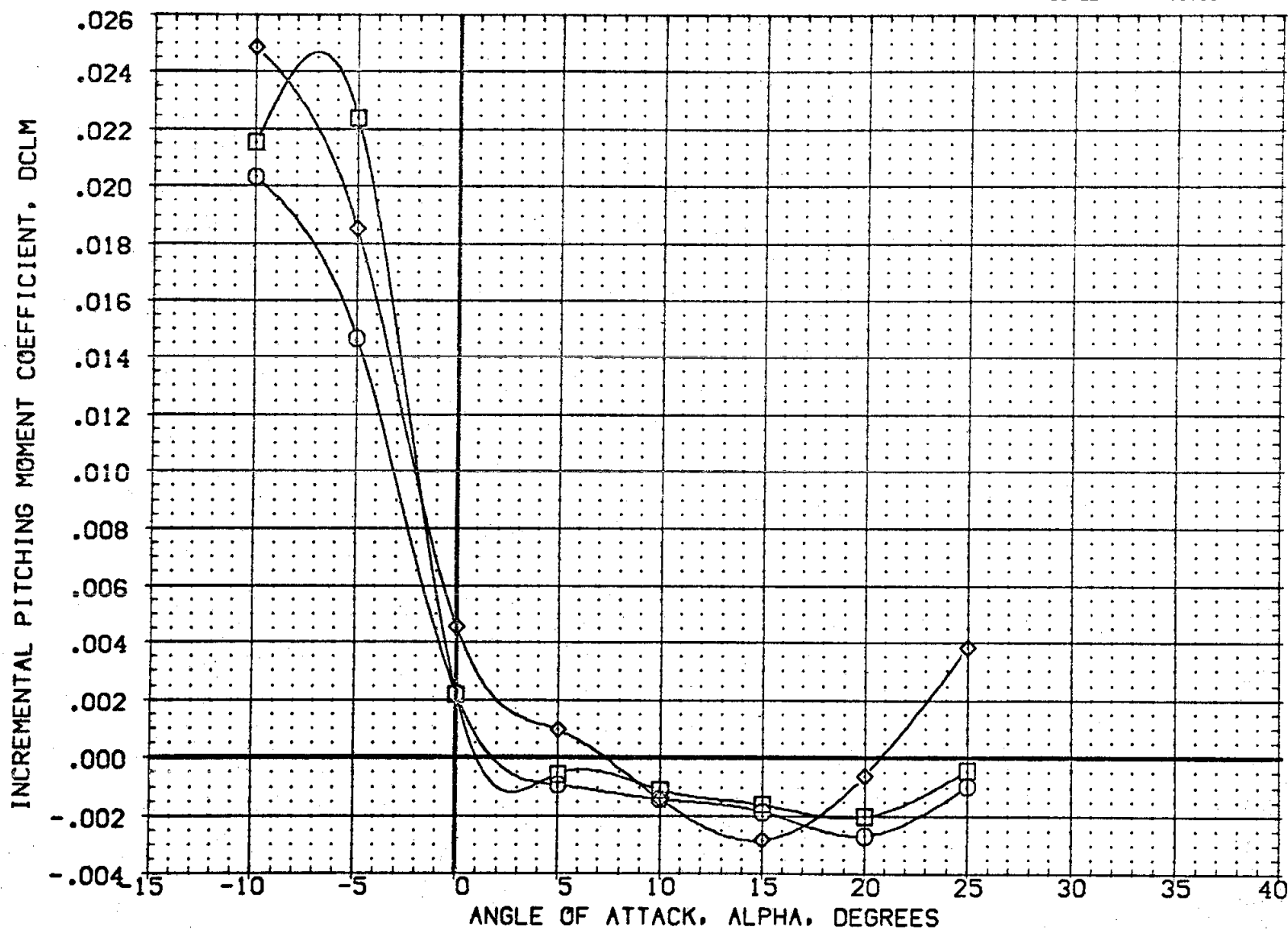


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2014)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(CH2026)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF 474.8100 IN.
(CH2012)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF 936.6800 IN.
							XMRF 1076.6700 IN. XO
							YMRF .0000 IN. YO
							ZMRF 375.0000 IN. ZO
							SCALE .0100

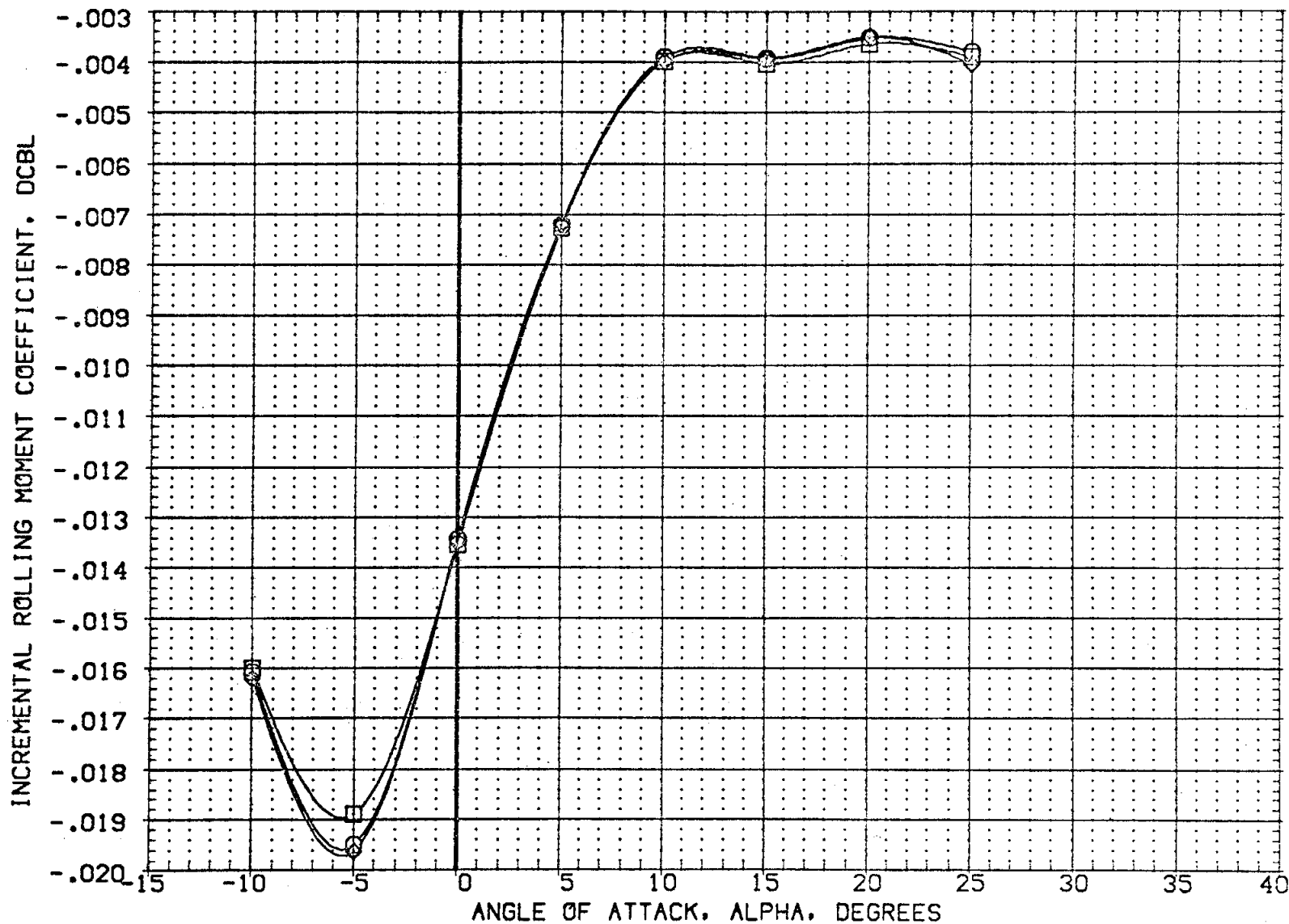


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(CH2014)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(CH2026)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF 474.8100 IN.
(CH2012)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF 936.6800 IN.
							XMRP 1076.6700 IN. XC
							YMRP .0000 IN. YC
							ZMRP 375.0000 IN. ZC
							SCALE .0100

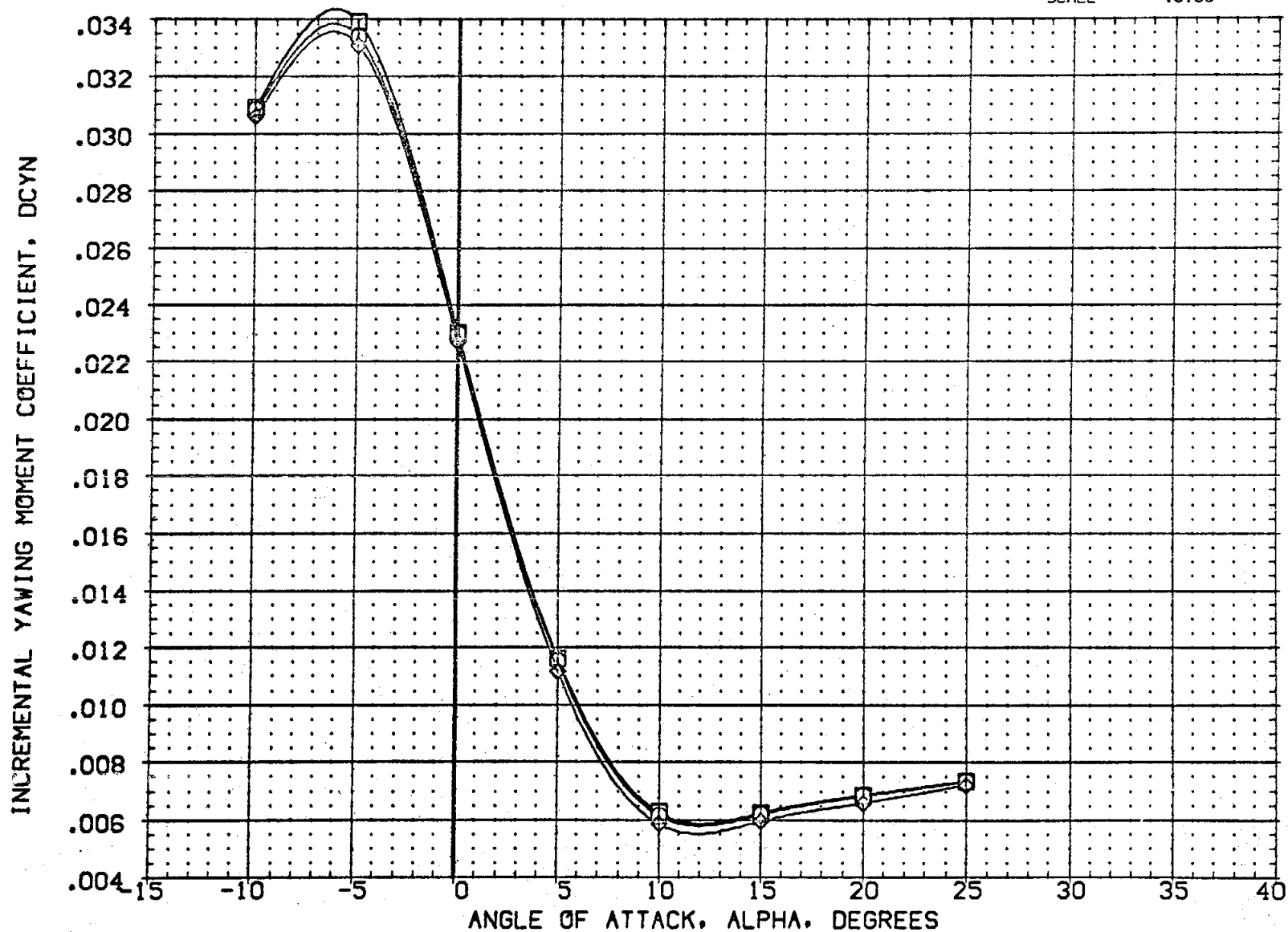


FIG 6 EFFECT OF BDflap DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH214N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000 SREF 2690.0000 SQ.FT.
(ZH226N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000 LREF 474.8100 IN.
(ZH212N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000 BREF 936.6800 IN.
(ZH202F)	OA105 CFHT109 MODEL 32 0(0) N52	RCS OFF	-14.250	.000	.000	.000 XMRP 1076.6700 IN. X0
(ZH203F)	OA105 CFHT109 MODEL 32 0(0) N51	RCS OFF	.000	.000	.000	.000 YMRP .0000 IN. Y0
(ZH201F)	OA105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000 ZMRP 375.0000 IN. Z0
						SCALE .0100

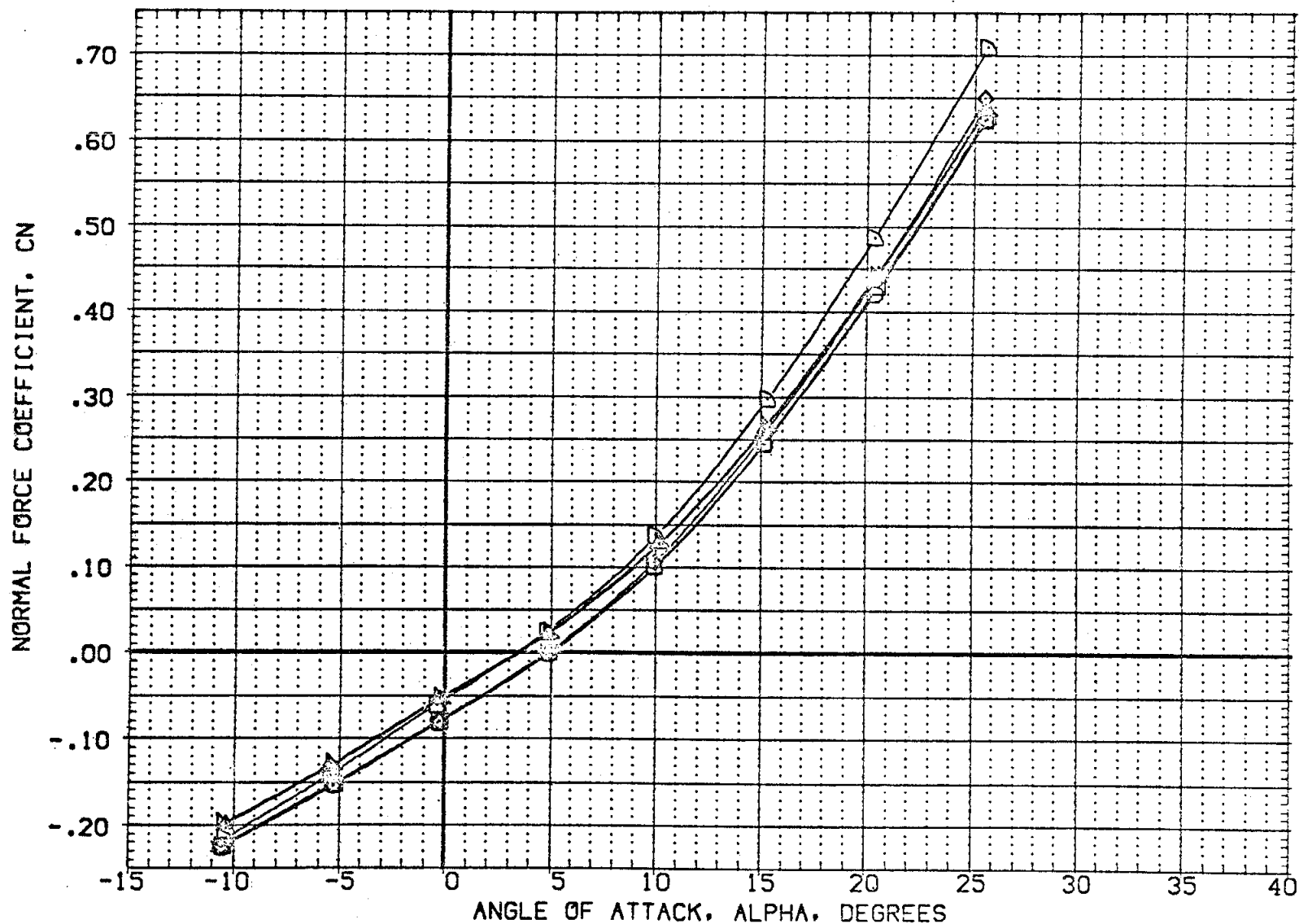


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH214N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(ZH226N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF 474.8100 IN.
(ZH212N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF 936.6800 IN.
(ZH202F)	OA105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-14.250	.000	.000	.000	XMRP 1076.6700 IN. XO
(ZH203F)	OA105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	.000	YMRP .0000 IN. YO
(ZH201F)	OA105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000	ZMRP 375.0000 IN. ZO
							SCALE .0100

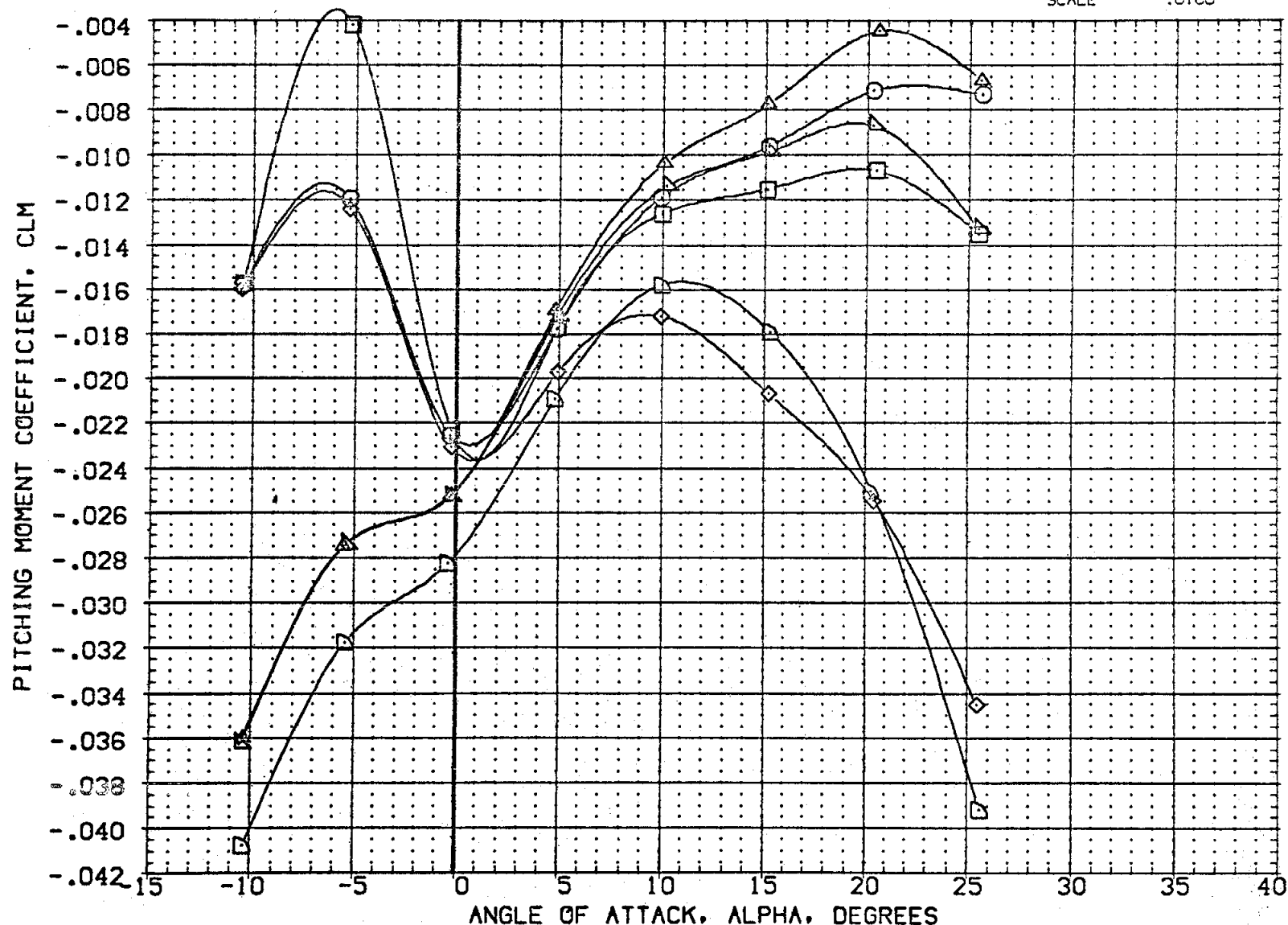


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
(ZH214N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(ZH226N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF 474.8100 IN.
(ZH212N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) N52	RCS OFF	-14.250	.000	.000	.000	XMRP 1076.6700 IN. X0
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	.000	.000	.000	.000	YMRP .0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000	ZMRP 375.0000 IN. Z0
							SCALE .0100

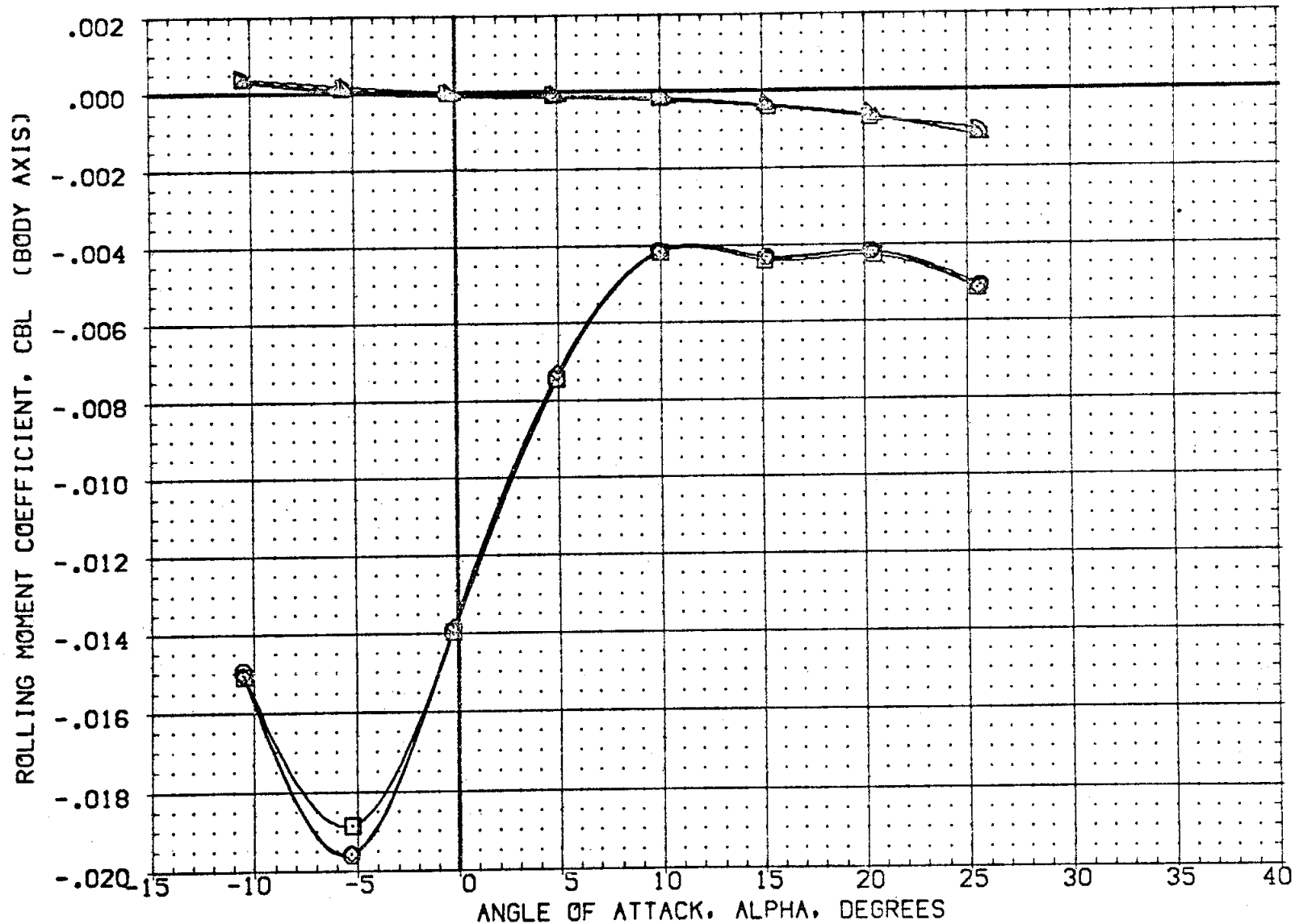


FIG 6 EFFECT OF BDflap DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH214N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(ZH226N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	.000	446.000	.000	7.000	LREF 474.8100 IN.
(ZH212N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	446.000	.000	7.000	BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) NN52	RCS OFF	-14.250	.000	.000	.000	XMRP 1076.6700 IN. XO
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NN51	RCS OFF	.000	.000	.000	.000	YMRP .0000 IN. YO
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) NS1	RCS OFF	13.750	.000	.000	.000	ZMRP 375.0000 IN. ZO
							SCALE .0100

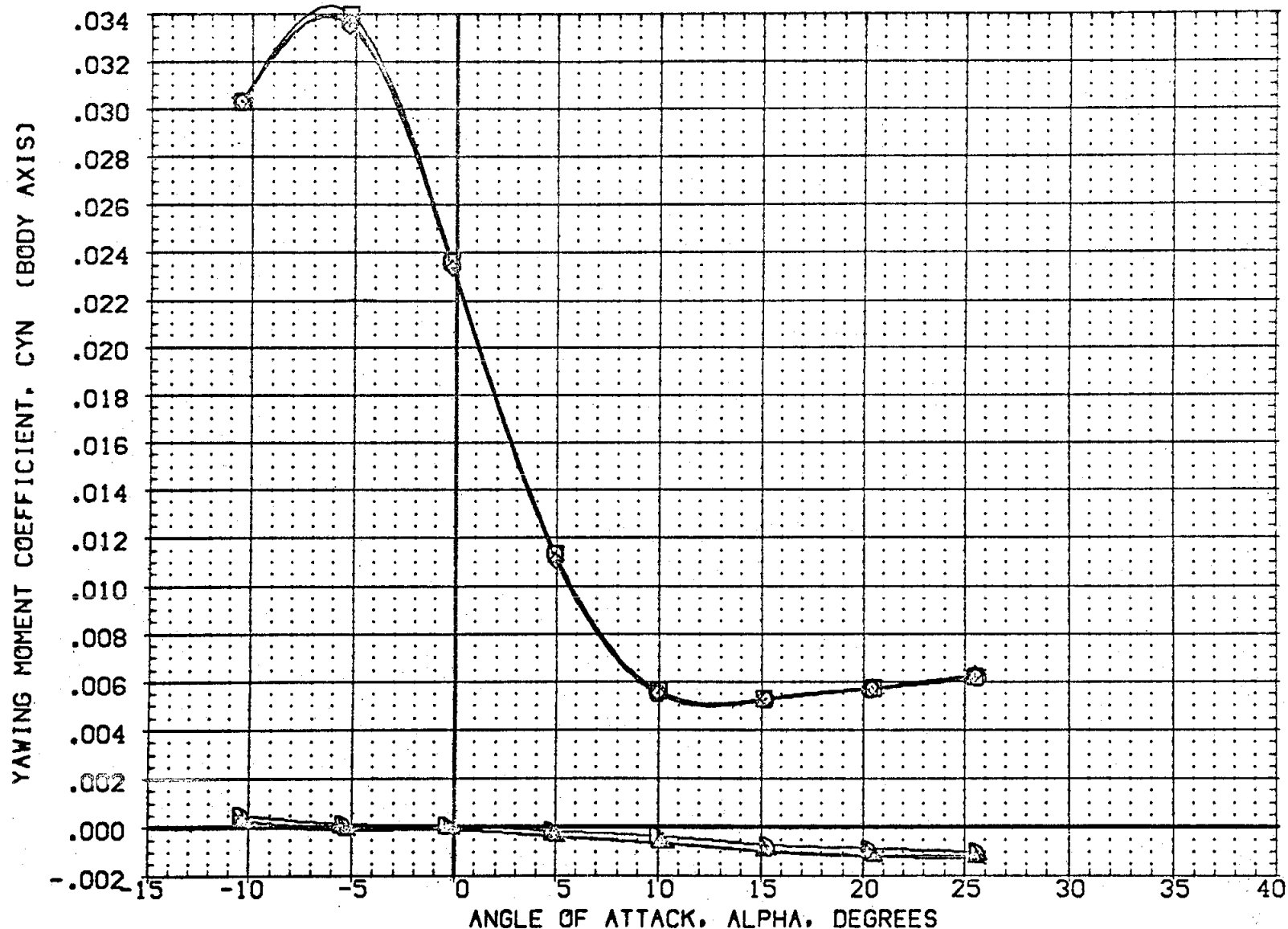


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BOFLAP	PCPCS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2013)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000	SREF	2690.0000	50.FT.
(CQ1007)	0A-85 CFHT101 MODEL 32-0 01N52	PITCH UP	.000	158.000	.000	20.000	LREF	474.8100	IN.
(CH2011)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000	BREF	936.6800	IN.
							XMRP	1076.6700	IN. X0
							YMRP	.0000	IN. Y0
							ZMRP	375.0000	IN. Z0
							SCALE	.0100	

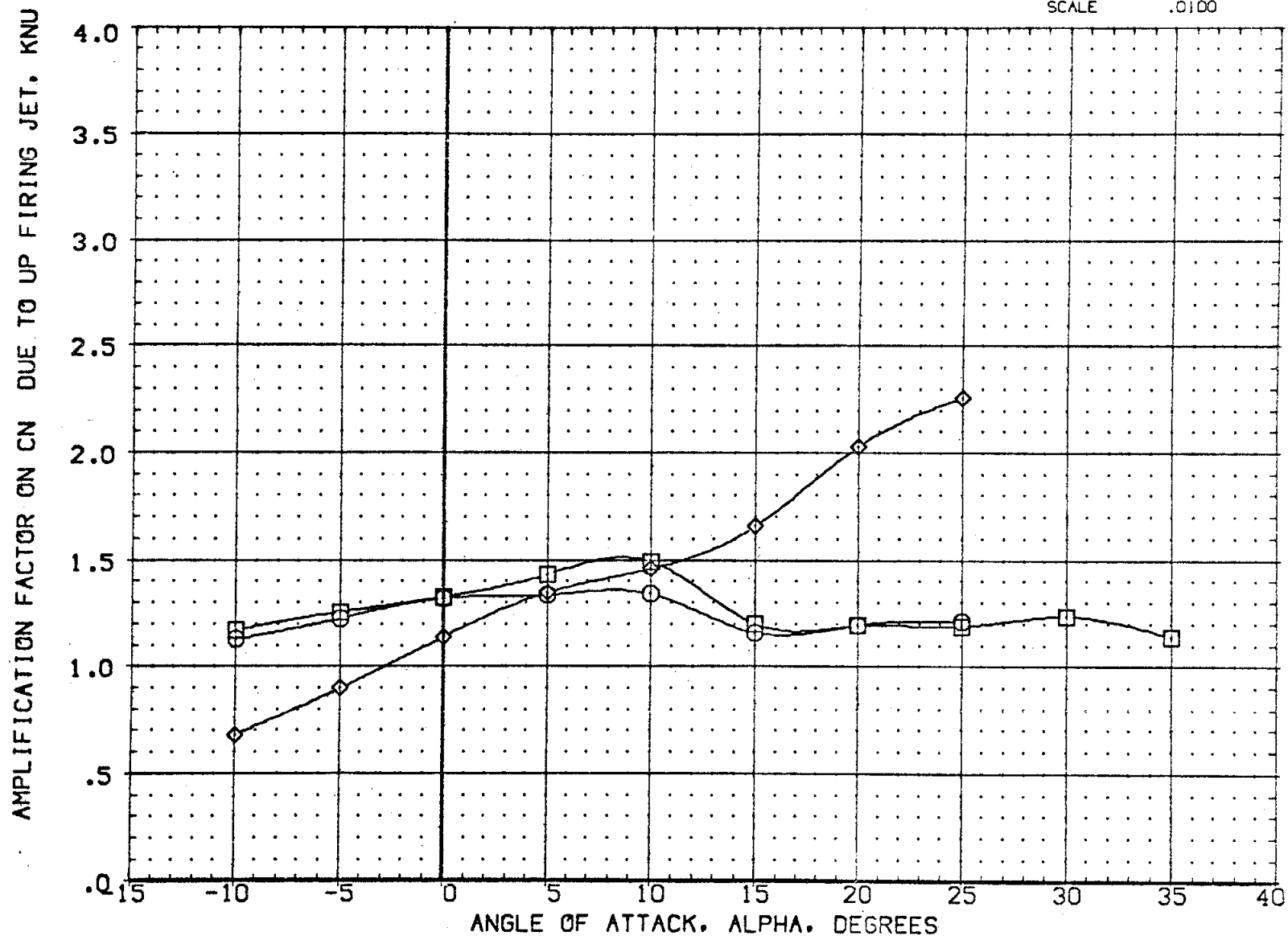


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2013)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(CQ1007)	OA-85 CFHT101 MODEL 32-0 01N52	PITCH UP	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH2011)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000	BREF	936.6900 IN.
							XMRF	1076.6700 IN. X0
							YMRF	.0000 IN. Y0
							ZMRF	375.0000 IN. Z0
							SCALE	.0100

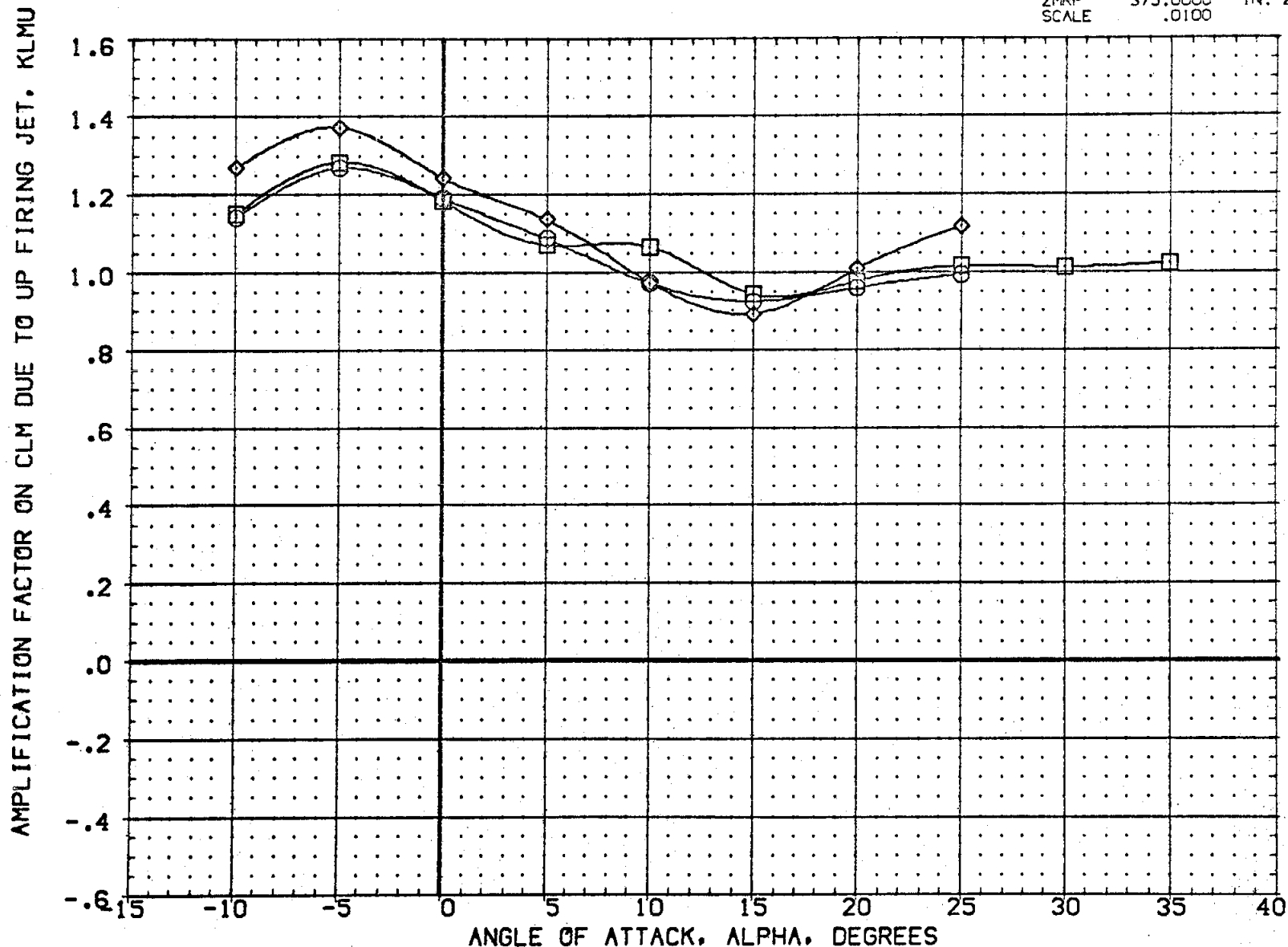


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2013)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(CG1007)	OA-85 CFHT101 MODEL 32-0 01N52	PITCH UP	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH2011)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

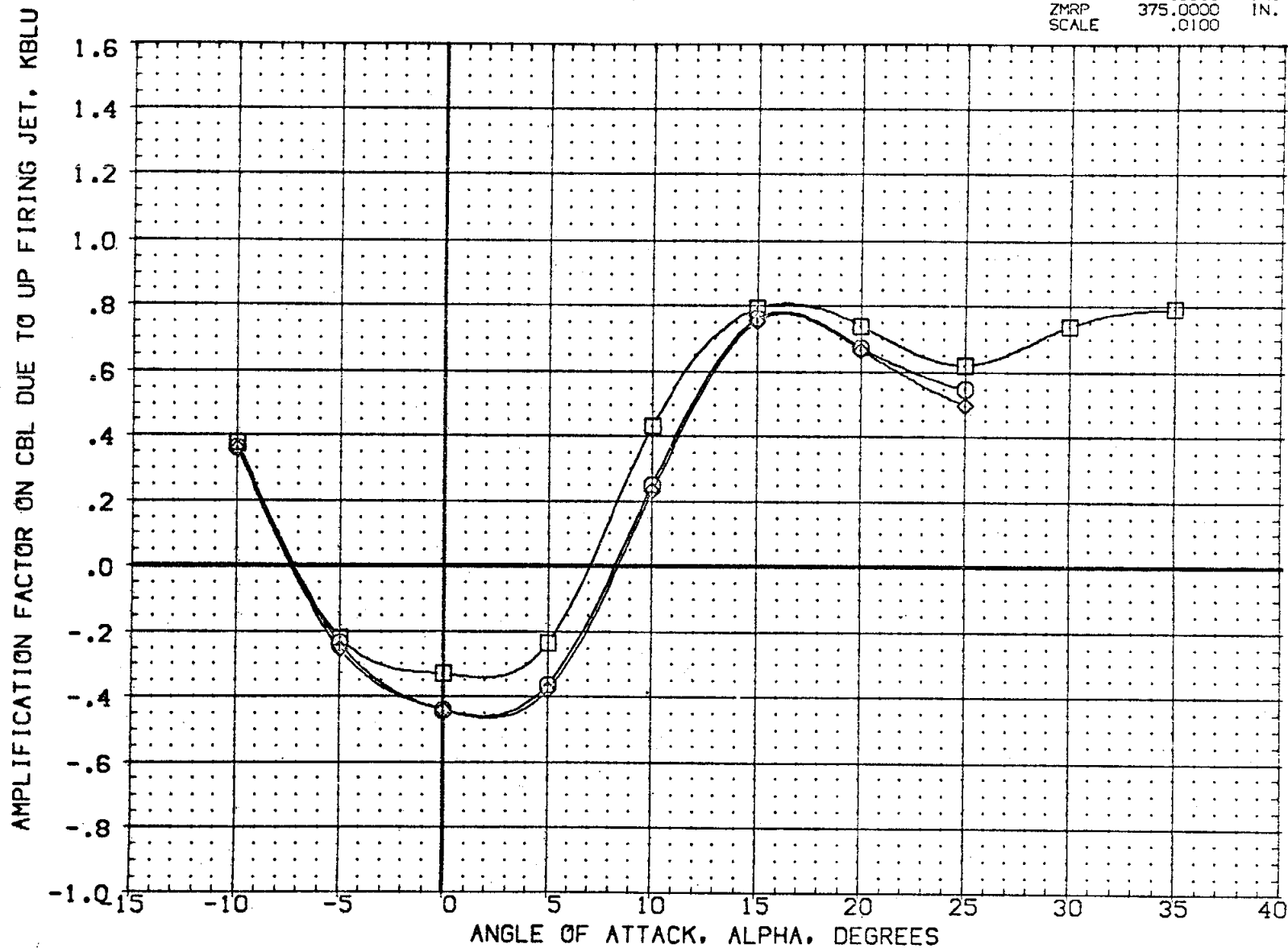


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(CH2013)	0A105 CFHT109 MODEL 32-0 (0)NS2	PITCH UP	-14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(C01007)	0A-85 CFHT101 MODEL 32-0 0INS2	PITCH UP	.000	158.000	.000	20.000	LREF 474.8100 IN.
(CH2011)	0A105 CFHT109 MODEL 32-0 (0)NS2	PITCH UP	13.750	158.000	.000	20.000	BREF 936.6800 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

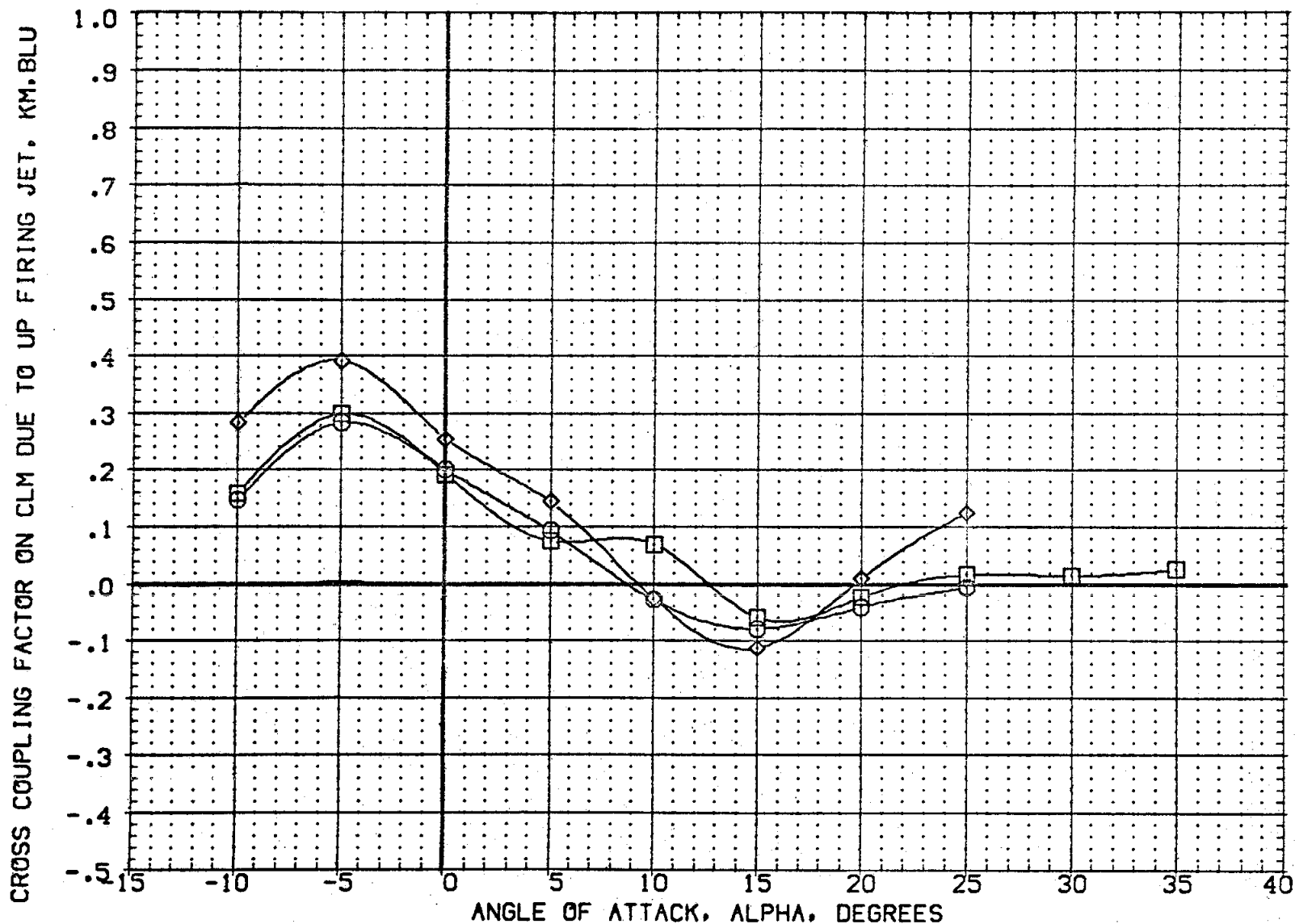


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(CH2013)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(C01007)	0A-85 CFHT101 MODEL 32-0 01N52	PITCH UP	.000	158.000	.000	20.000	LREF 474.8100 IN.
(CH2011)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000	BREF 936.6800 IN.
							XMRF 1076.6700 IN. X0
							YMRF .0000 IN. Y0
							ZMRF 375.0000 IN. Z0
							SCALE .0100

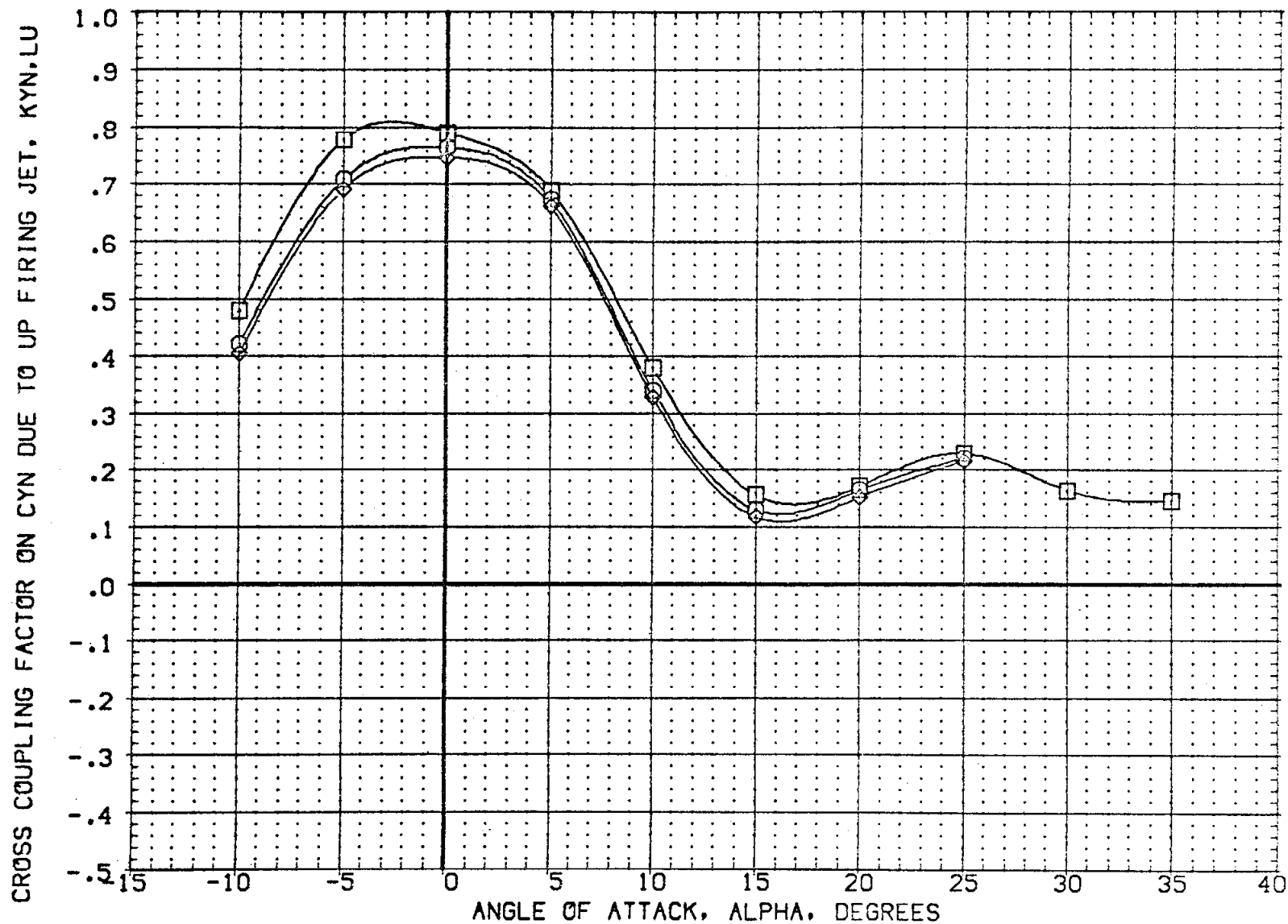


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(CH2013)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(CQ1007)	OA-85 CFHT101 MODEL 32-0 (0)N52	PITCH UP	.000	158.000	.000	20.000	LREF 474.8100 IN.
(CH2011)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000	BREF 936.6800 IN.
							XMRP 1076.6700 IN. XO
							YMRP .0000 IN. YO
							ZMRP 375.0000 IN. ZO
							SCALE .0100

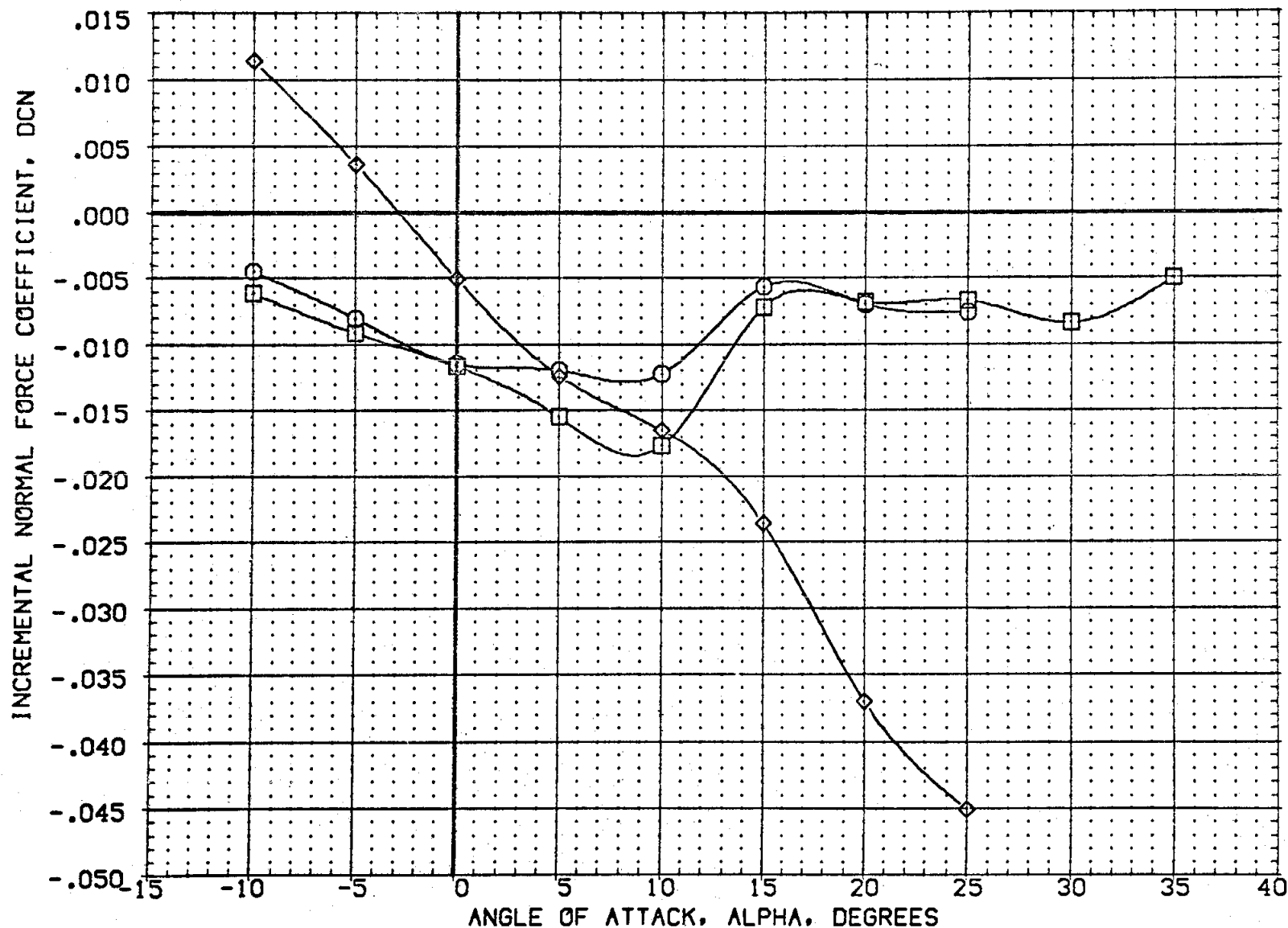


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2013)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(CQ1007)	OA-85 CFHT101 MODEL 32-0 01N52	PITCH UP	.000	158.000	.000	20.000	LREF 474.8100 IN.
(CH2011)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000	BREF 936.6800 IN.
							XMXP 1076.6700 IN. XC
							YMRP .0000 IN. YO
							ZMRP 375.0000 IN. ZO
							SCALE .0100

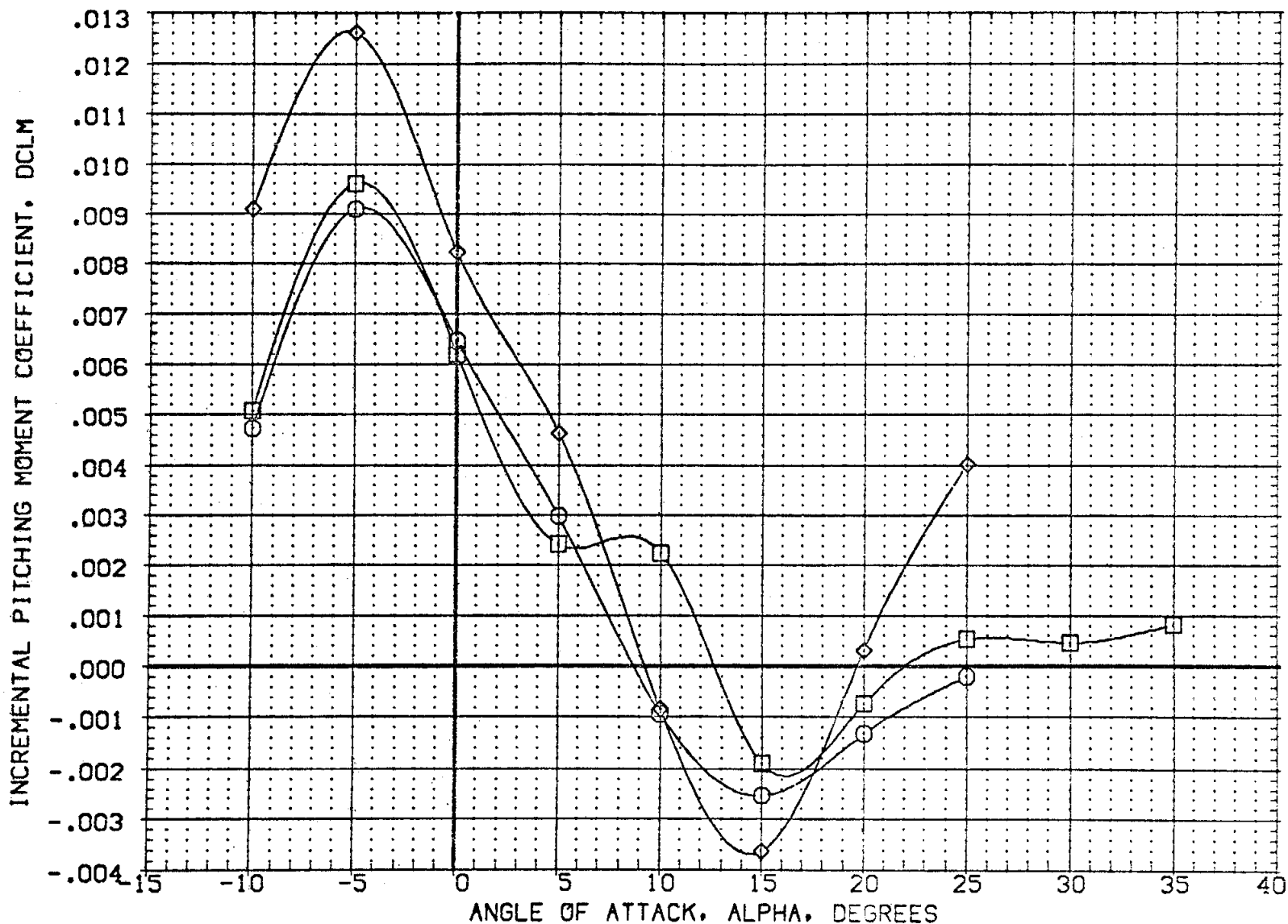


FIG. 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2013)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(CQ1007)	OA-85 CFHT101 MODEL 32-0 01N52	PITCH UP	.000	158.000	.000	20.000	LREF 474.8100 IN.
(CH2011)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000	BREF 936.6800 IN.
							XMRP 1076.6700 IN. XC
							YMRP .0000 IN. YO
							ZMRP 375.0000 IN. ZC
							SCALE .0100

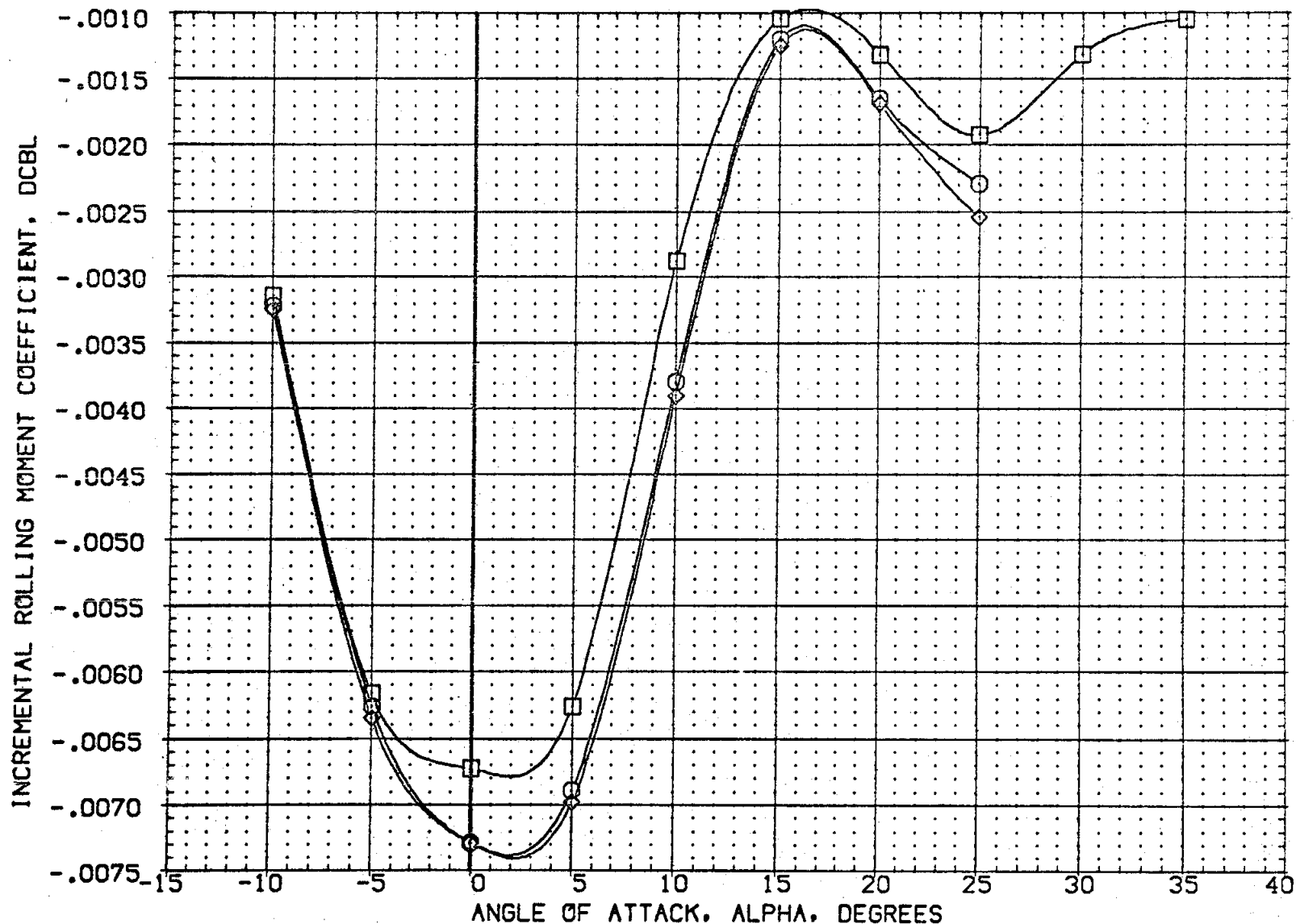


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(CH2013)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(C01007)	OA-85 CFHT101 MODEL 32-0 (0)N52	PITCH UP	.000	158.000	.000	20.000	LREF 474.8100 IN.
(CH2011)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000	BREF 936.6900 IN.
							XMRP 1076.6700 IN. XO
							YMRP .0000 IN. YO
							ZMRP 375.0000 IN. ZO
							SCALE .0100

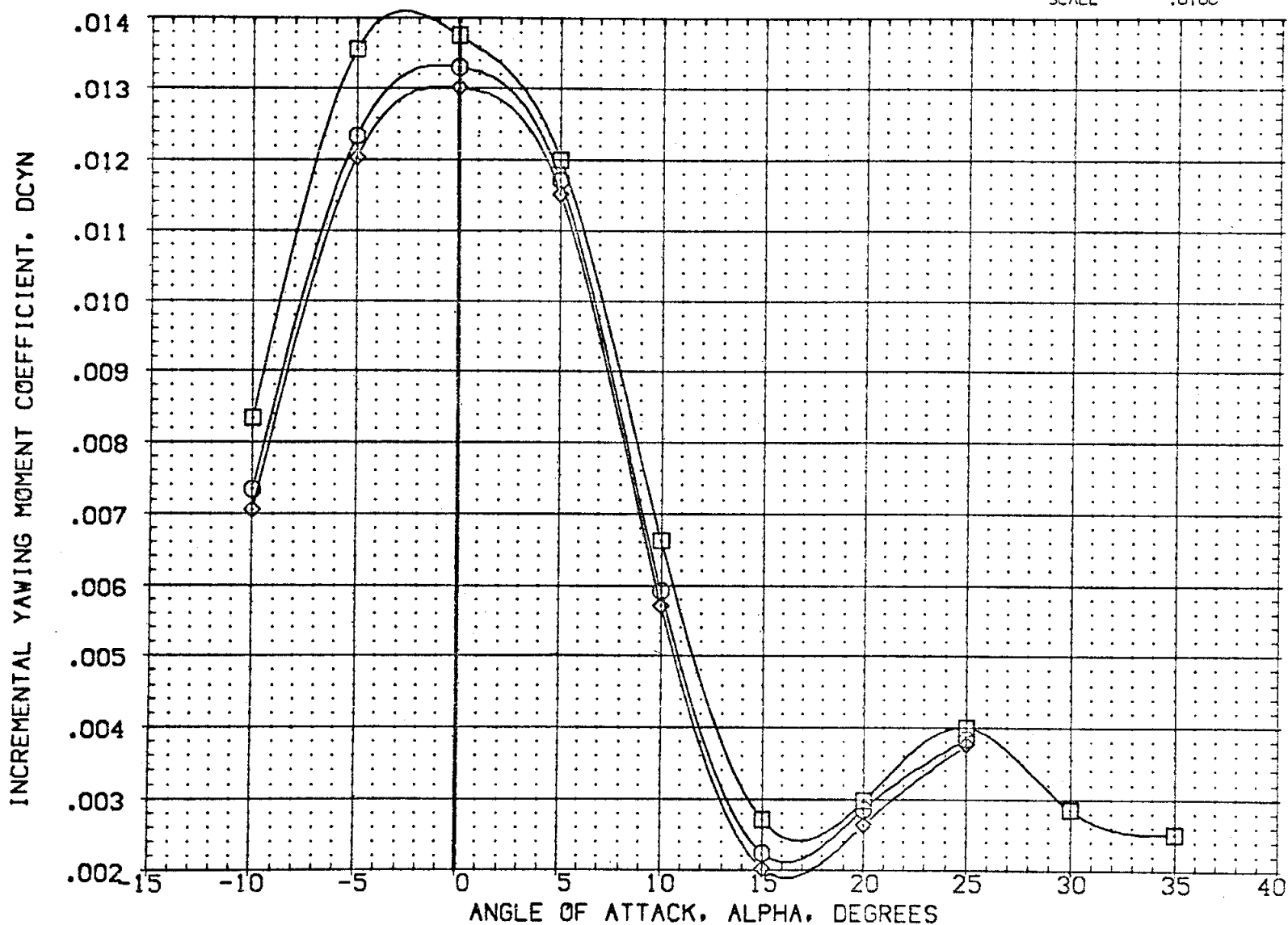


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION		BDFLAP	PCRC	ELEVON	O-SIM	REFERENCE INFORMATION		
(ZH213N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000	SREF	2690.0000	50. FT.
(ZQ107N)	OA-85 CFHT101 MODEL 32-0 01N52	PITCH UP	.000	158.000	.000	20.000	LREF	474.8100	IN.
(ZH211N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000	BREF	936.6800	IN.
(ZH202F)	OA105 CFHT109 MODEL 32 0(0) NN52	RCS OFF	-14.250	.000	.000	.000	XMRP	1076.6700	IN. X0
(ZQ103F)	OA-85 CFHT101 MODEL 32-0 01 N52	RCS OFF	.000	.000	.000	.000	YMRP	.0000	IN. Y0
(ZH201F)	OA105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000	ZMRP	375.0000	IN. Z0
							SCALE	.0100	

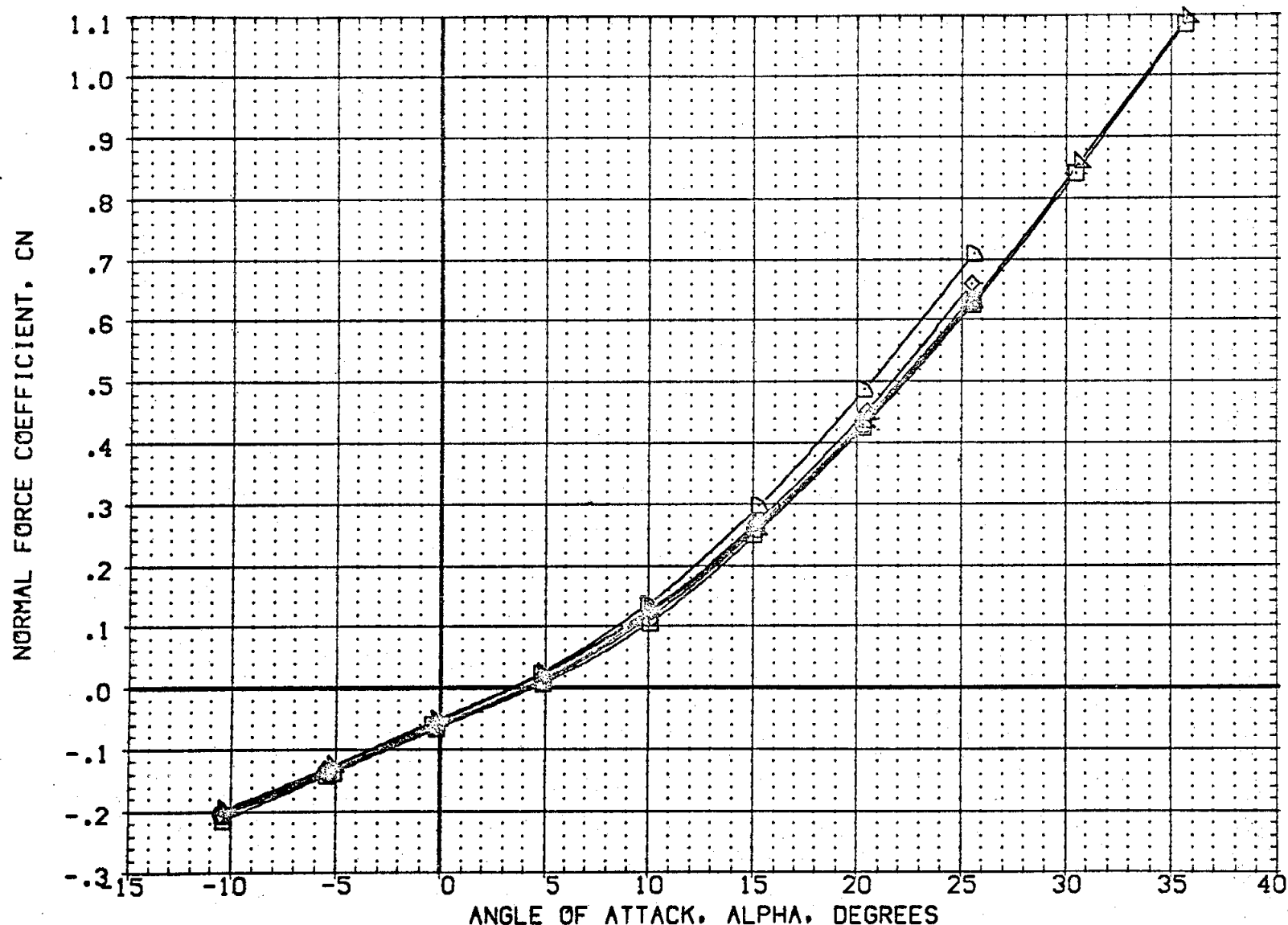


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(ZH213N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(ZQ107N)	OA-85 CFHT101 MODEL 32-0 01N52	PITCH UP	.000	158.000	.000	20.000	LREF	474.8100 IN.
(ZH211N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000	BREF	936.6900 IN.
(ZH202F)	OA105 CFHT109 MODEL 32 0(0) NN52	RCS OFF	-14.250	.000	.000	.000	XMRP	1076.6700 IN. X0
(ZQ103F)	OA-85 CFHT101 MODEL 32-0 01 N52	RCS OFF	.000	.000	.000	.000	YMRP	.0000 IN. Y0
(ZH201F)	OA105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000	ZMRP	375.0000 IN. Z0
							SCALE	.0100

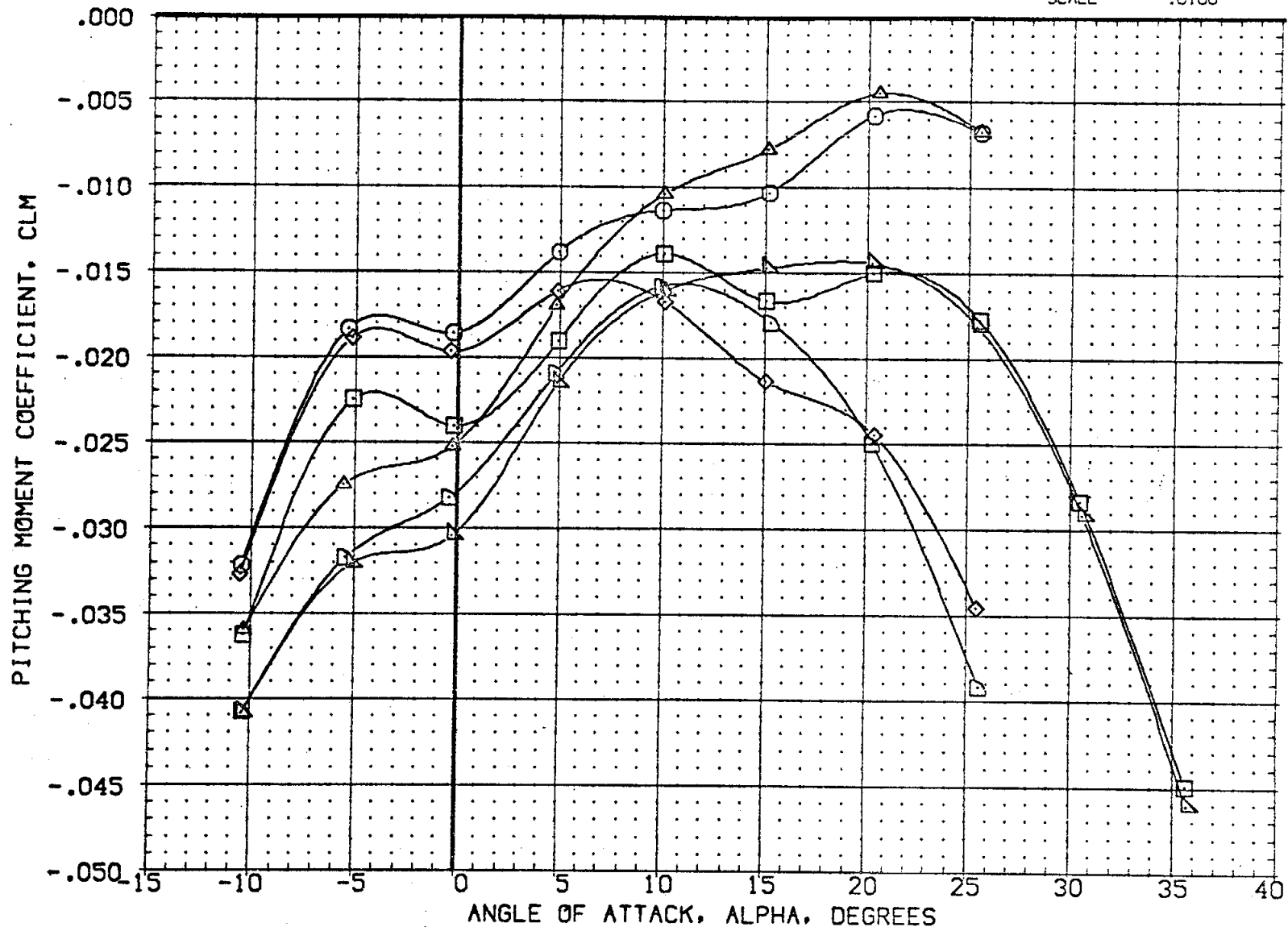


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH213N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP -14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(Z0107N)	OA-85 CFHT101 MODEL 32-0 01N52	PITCH UP .000	158.000	.000	20.000	LREF 474.8100 IN.
(ZH211N)	OA105 CFHT109 MODEL 32-0 (0)N52	PITCH UP 13.750	158.000	.000	20.000	BREF 935.6900 IN.
(ZH202F)	OA105 CFHT109 MODEL 32 0(0) NN52	RCS OFF -14.250	.000	.000	.000	XMRP 1076.6700 IN. XO
(Z0103F)	OA-85 CFHT101 MODEL 32-0 01 N52	RCS OFF .000	.000	.000	.000	YMRP .0000 IN. YO
(ZH201F)	OA105 CFHT109 MODEL 32 0(0) N51	RCS OFF 13.750	.000	.000	.000	ZMRP 375.0000 IN. ZO
						SCALE .0100

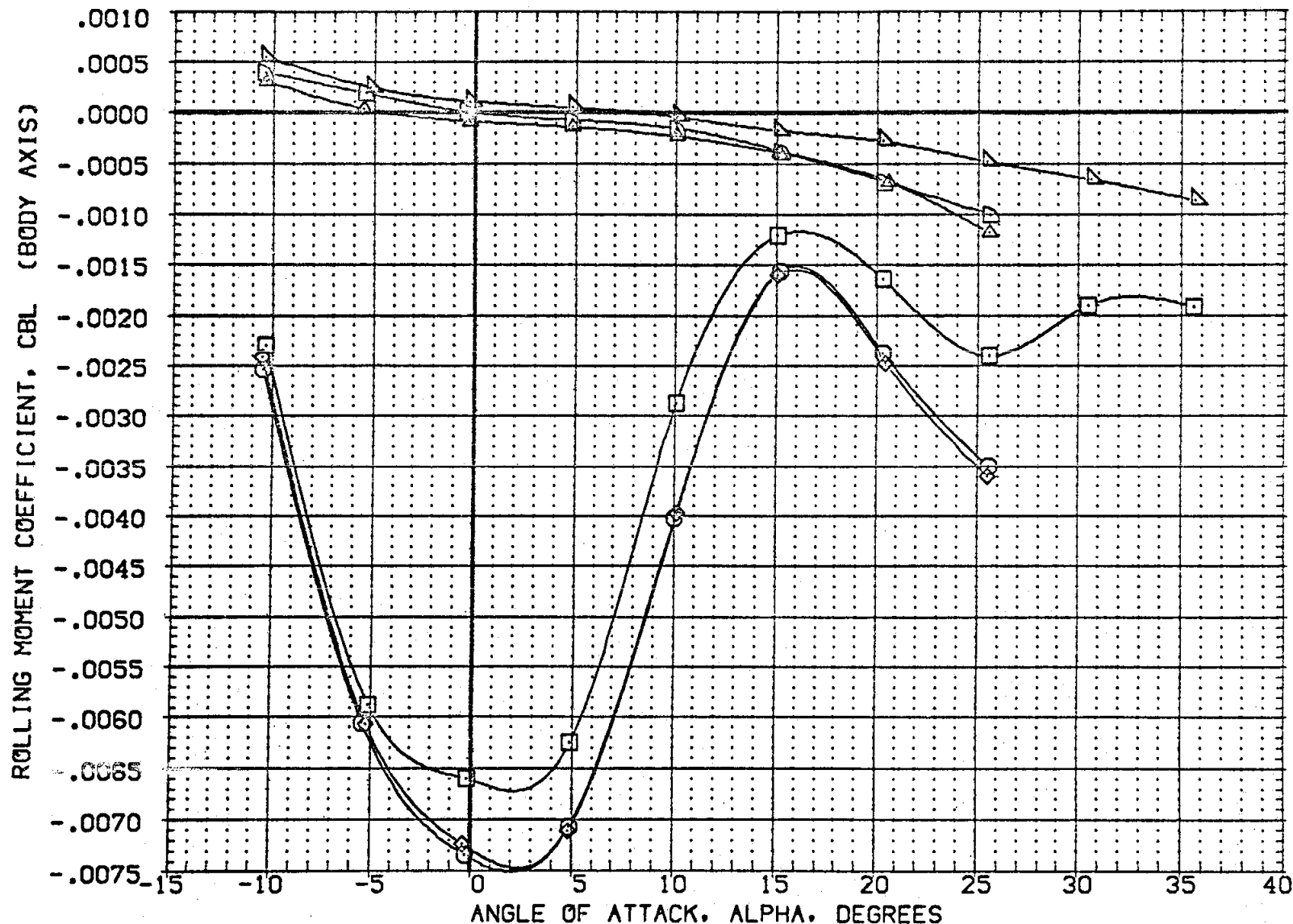


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH213N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	-14.250	158.000	.000	20.000 SREF 2690.0000 SQ.FT.
(Z0107N)	0A-85 CFHT101 MODEL 32-0 01N52	PITCH UP	.000	158.000	.000	20.000 LREF 474.8100 IN.
(ZH211N)	0A105 CFHT109 MODEL 32-0 (0)N52	PITCH UP	13.750	158.000	.000	20.000 BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) N52	RCS OFF	-14.250	.000	.000	.000 XMRP 1076.6700 IN. X0
(Z0103F)	0A-85 CFHT101 MODEL 32-0 01 N52	RCS OFF	.000	.000	.000	.000 YMRP .0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) NS1	RCS OFF	13.750	.000	.000	.000 ZMRP 375.0000 IN. Z0
						SCALE .0100

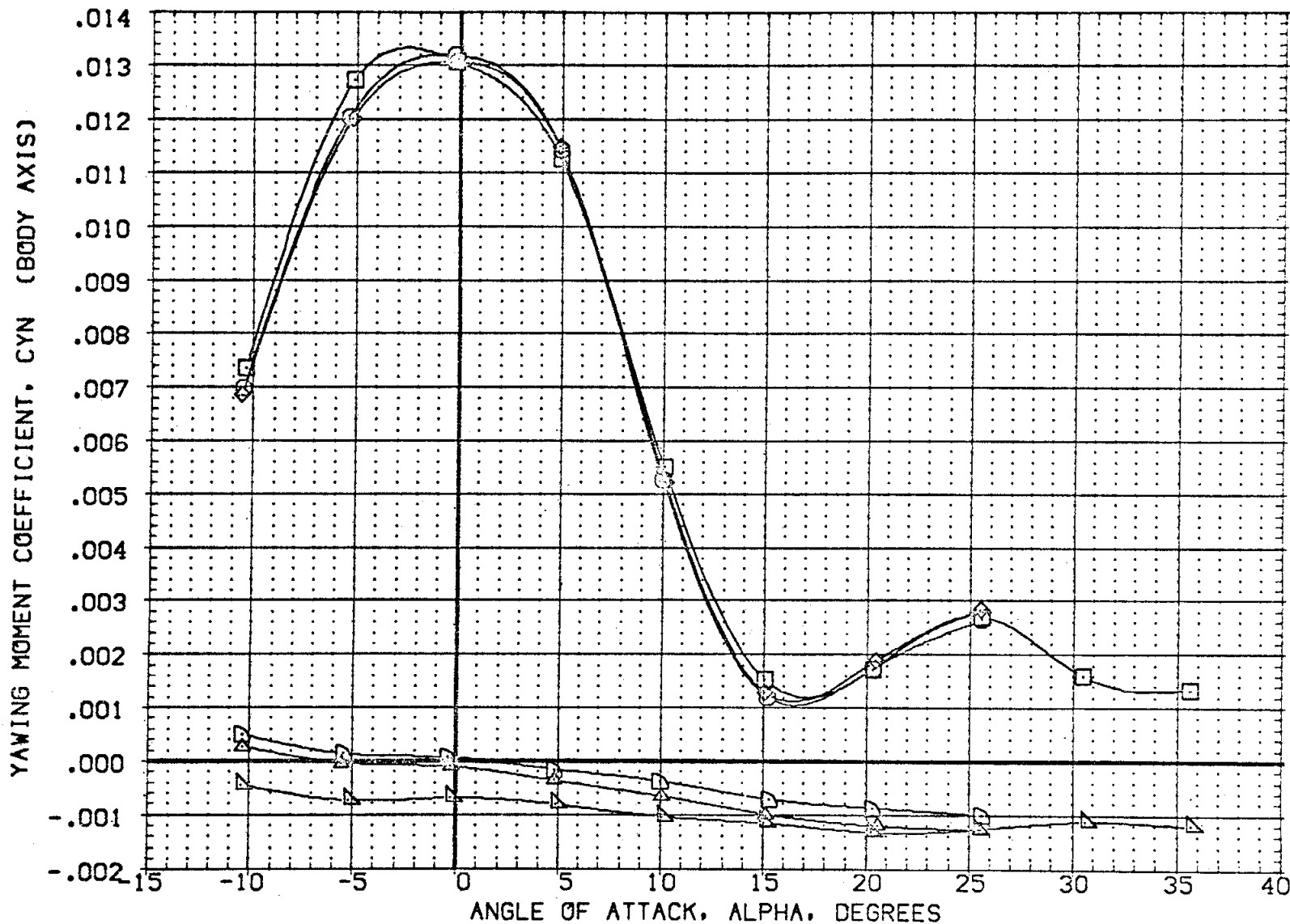


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2010) ○ 0A105 CFPT109 MODEL 32-0 (0)N52

PITCH UP

BDFLAP 13.750 PCPCS 62.000 ELEVON .000 Q-SIM 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. XO  
YMRP .0000 IN. YO  
ZMRP 375.0000 IN. ZO  
SCALE .0100

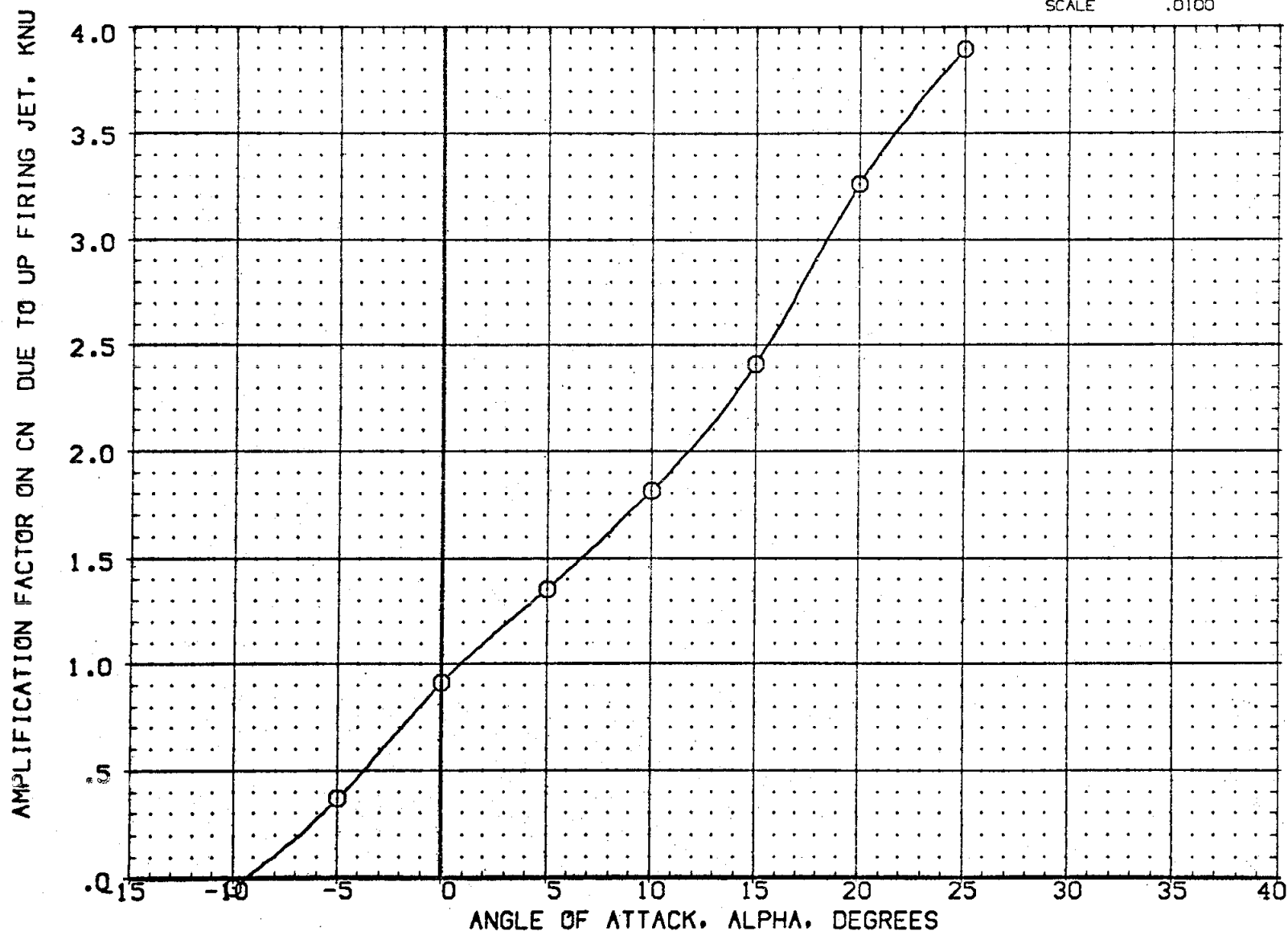


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

AMPLIFICATION FACTOR ON CLM DUE TO UP FIRING JET, KLMU

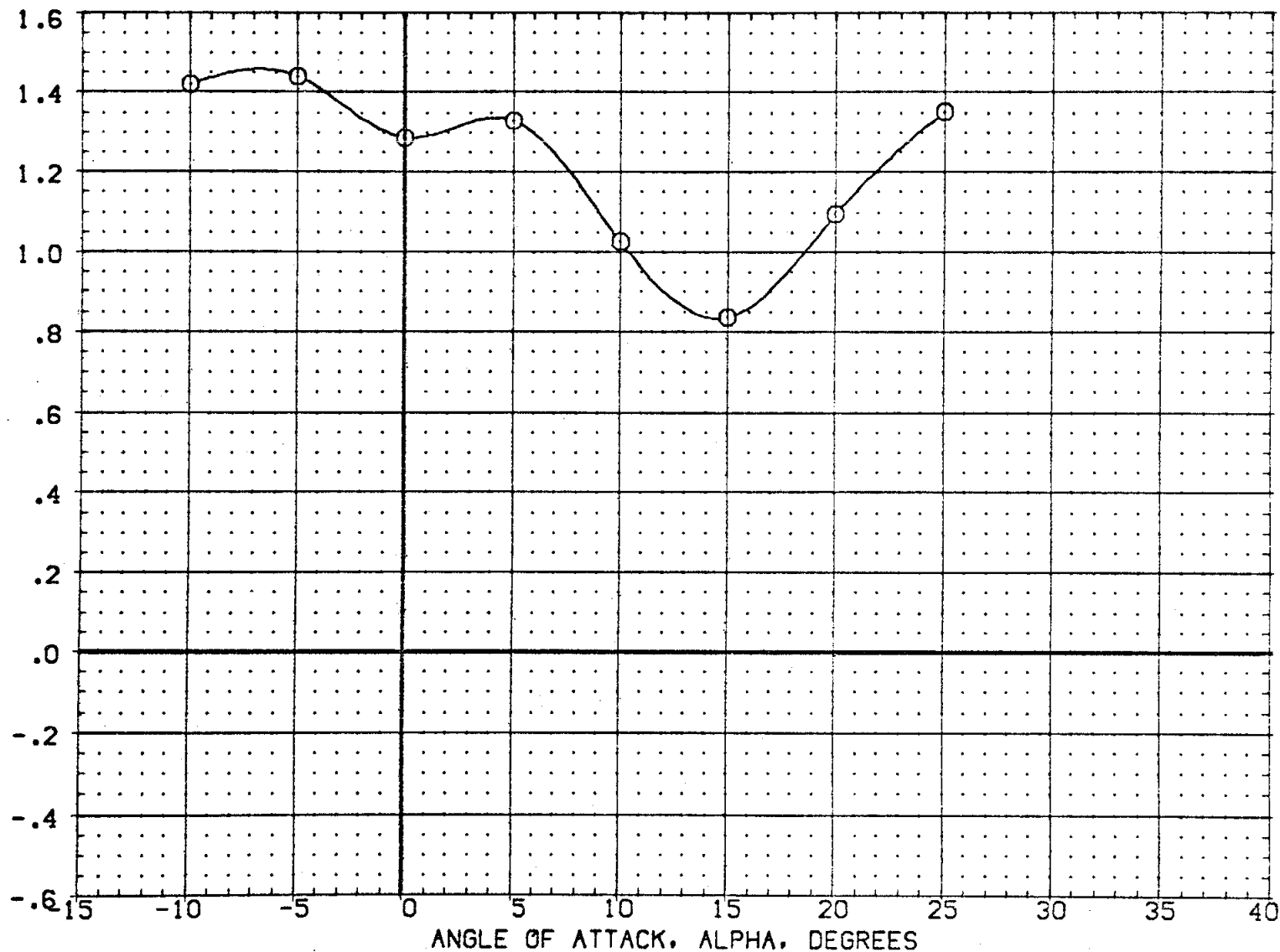


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (CH2010) ○ 0A105 CFHT109 MODEL 32-0 (0)N52

PITCH UP

BDFLAP 13.750 PCRC5 62.000  
 ELEVON .000 Q-SIM 50.000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100

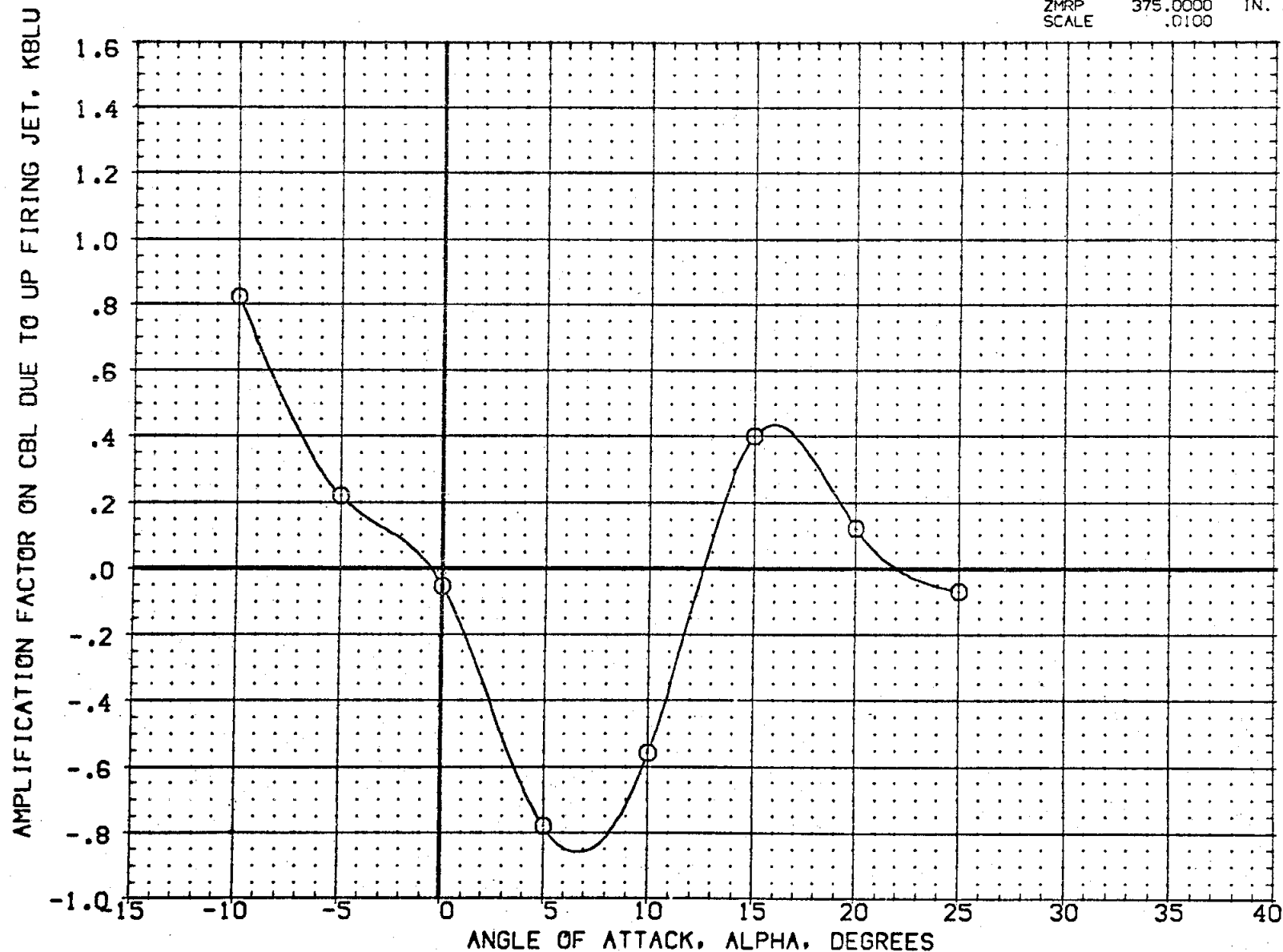


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33



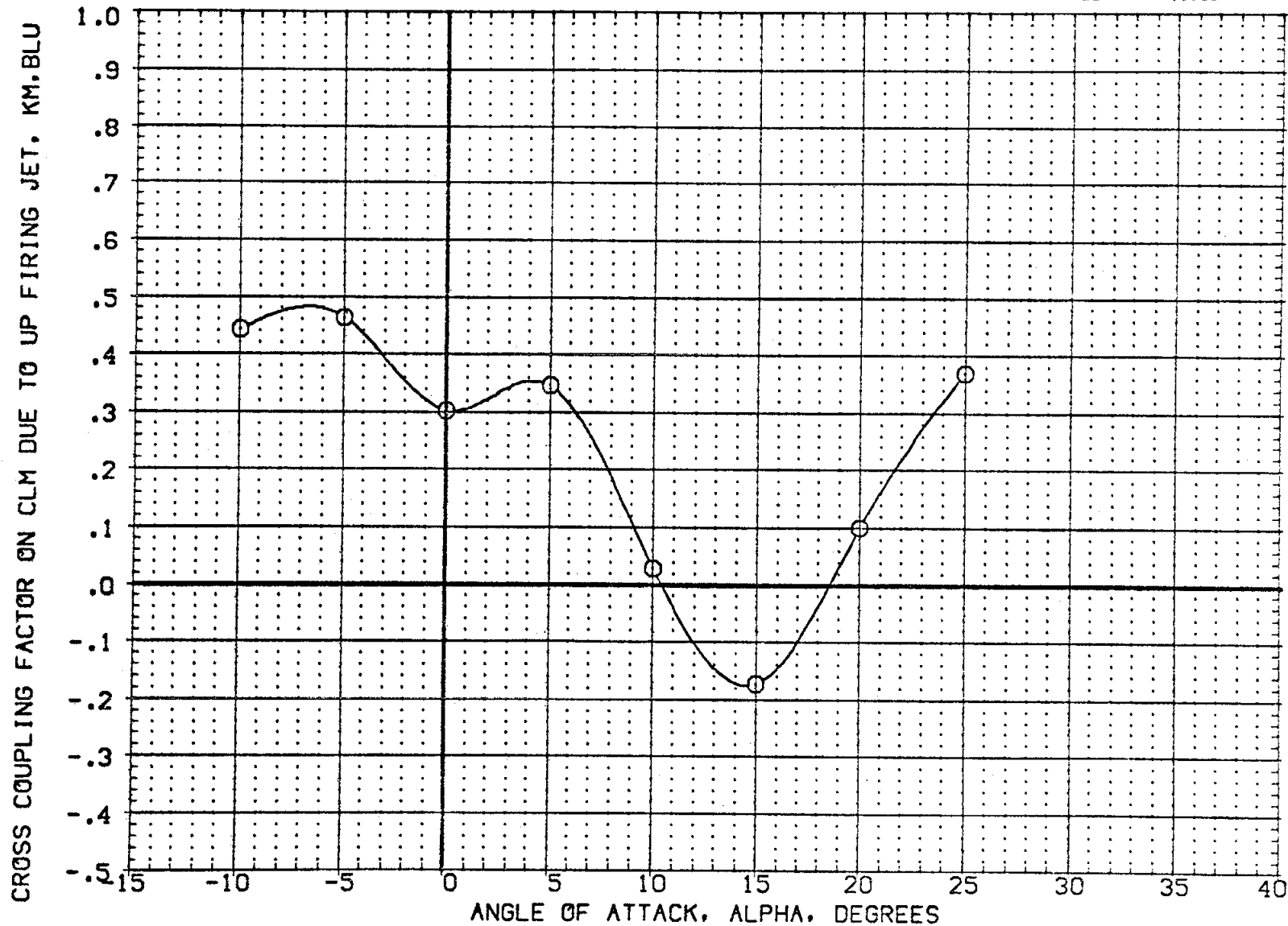


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2010) ○ 0A105 OF 109 MODEL 32-0 (0)N52

PITCH UP

BDFLAP  
13.750

PCRC5  
62.000

ELEVON  
.000

Q-SIM  
50.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1076.6700	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0100	

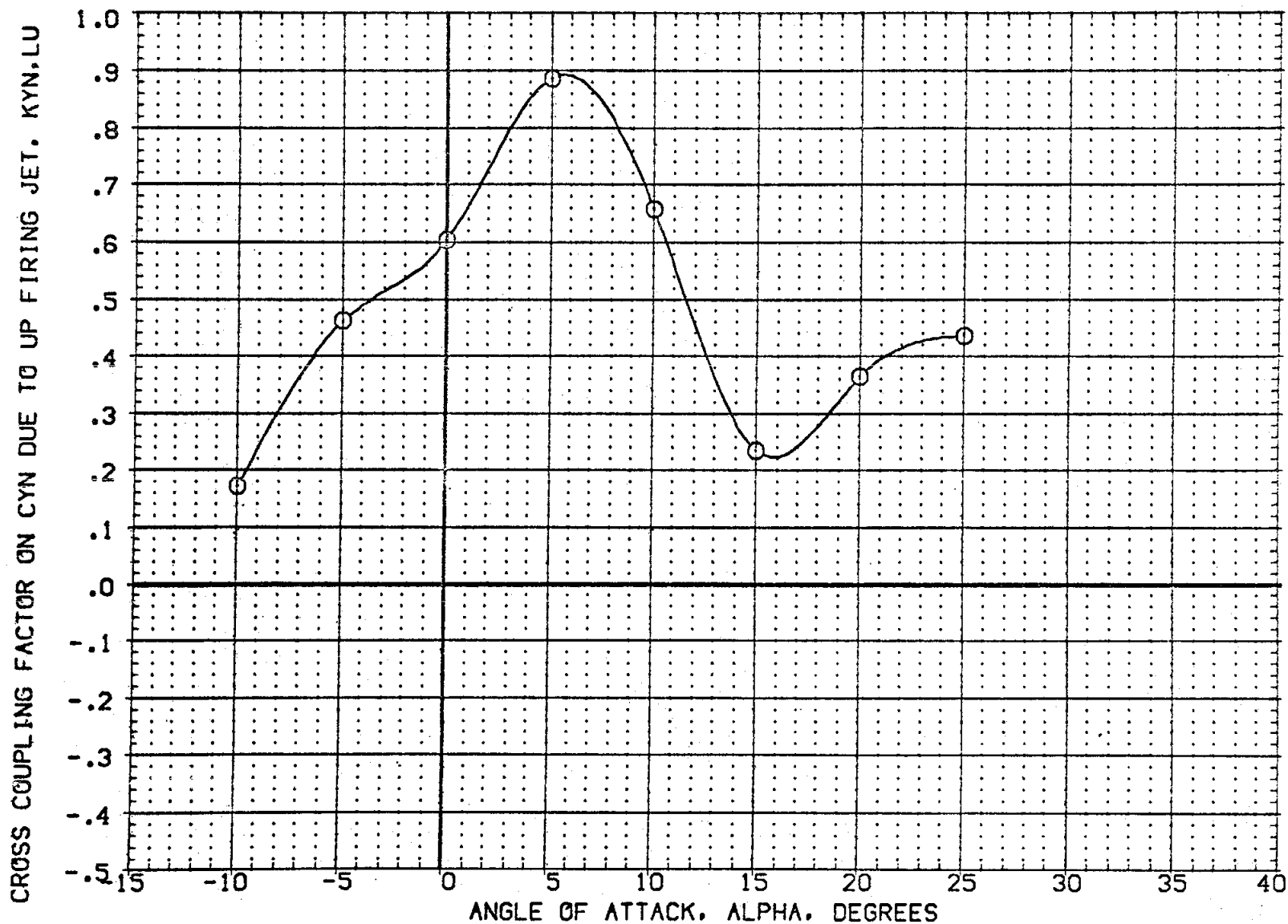


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

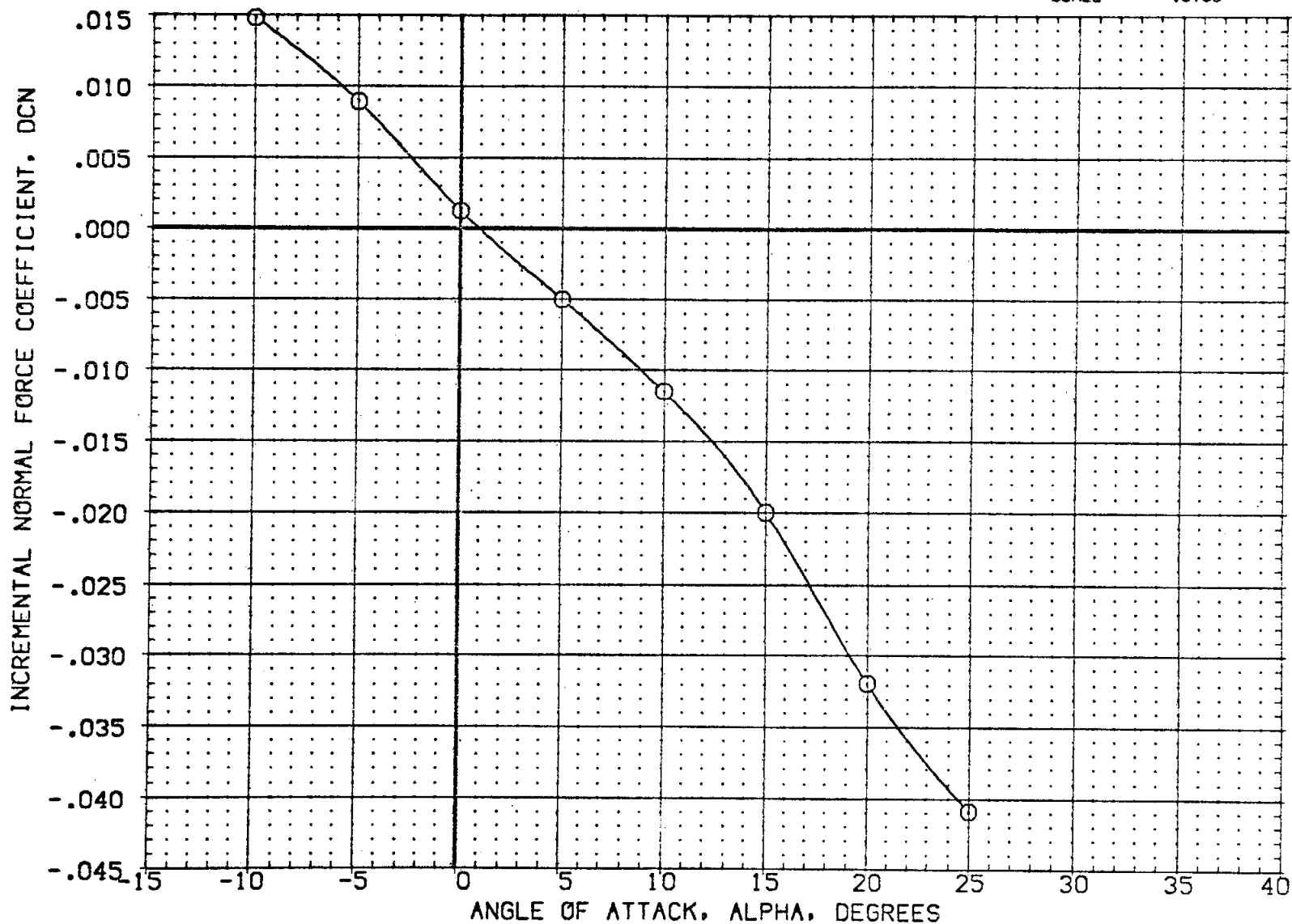


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2010) ○ 0A105 CEF1109 MODEL 32-0 (0)N52

PITCH UP

BDFLAP  
13.750

PCRC5  
62.000

ELEVON  
.000

0-SIM  
50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

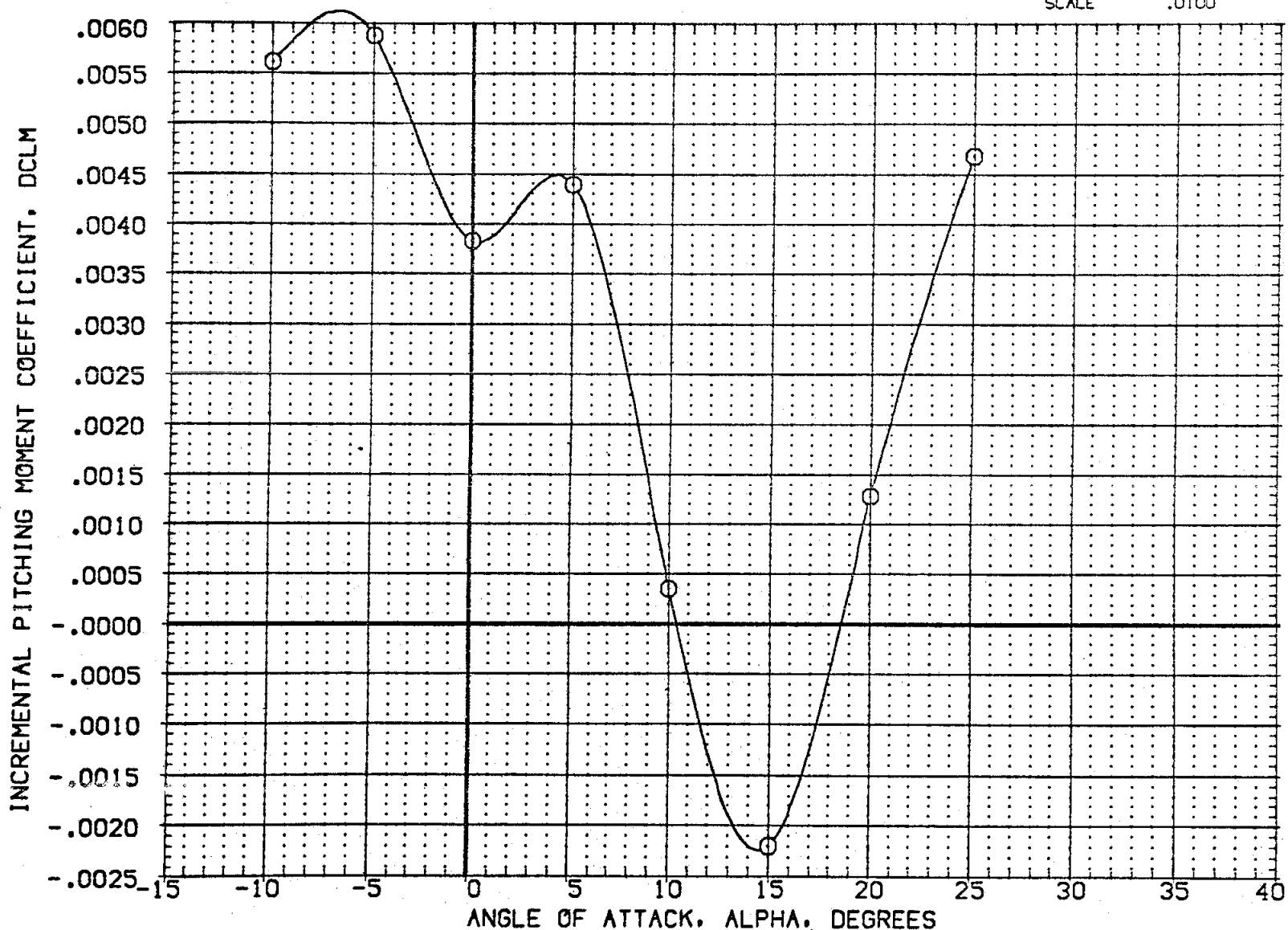


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

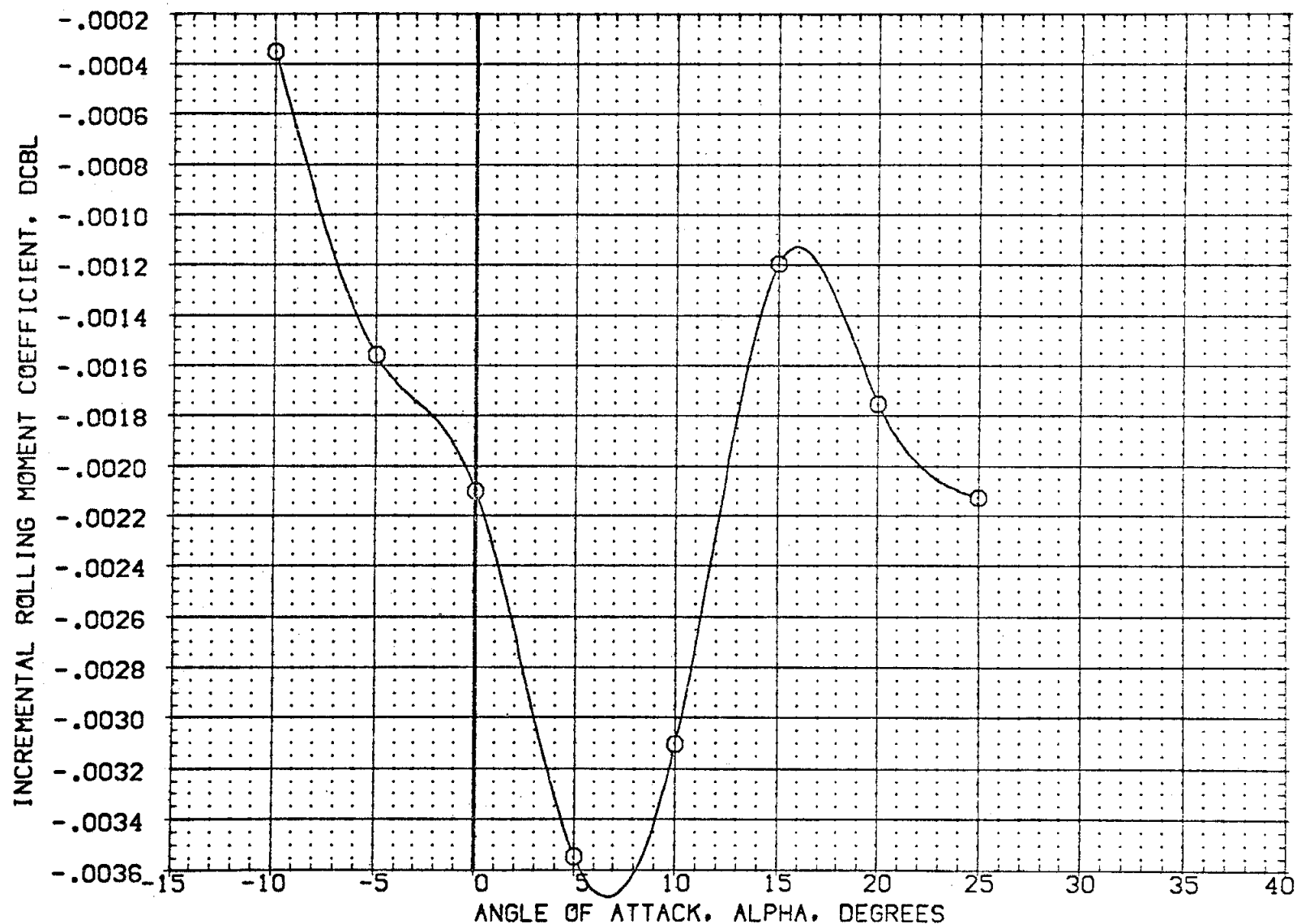


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL. CONFIGURATION DESCRIPTION  
(CH2010) ○ 0A105 CFT109 MODEL 32-0 (0)N52

PITCH UP

BOFLAP  
13.750

PCRC5  
62.000

ELEVON  
.000

Q-SIM  
50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

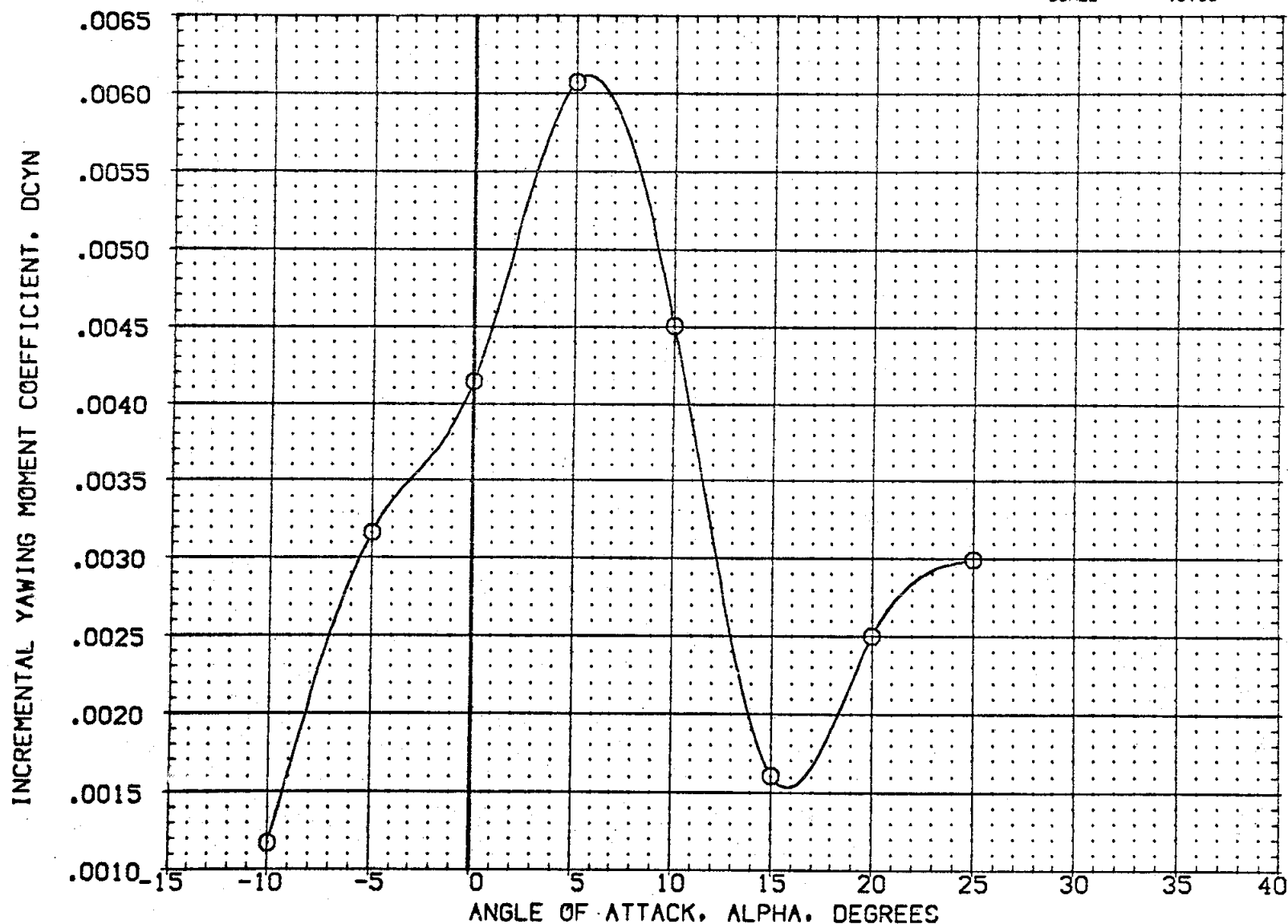


FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (ZH210N) ☐ 0A105 CFHT109 MODEL 32-0 (0)N52  
 (ZH201F) ☐ 0A105 CFHT109 MODEL 32 0(0) N51

		BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
PITCH UP	13.750	62.000	.000	50.000	SREF	2690.0000	SQ.FT.
RCS OFF	13.750	.000	.000	.000	LREF	474.8100	IN.
					BREF	936.6900	IN.
					XMRP	1076.8700	IN. X0
					YMRP	.0000	IN. Y0
					ZMRP	375.0000	IN. Z0
					SCALE	.0100	

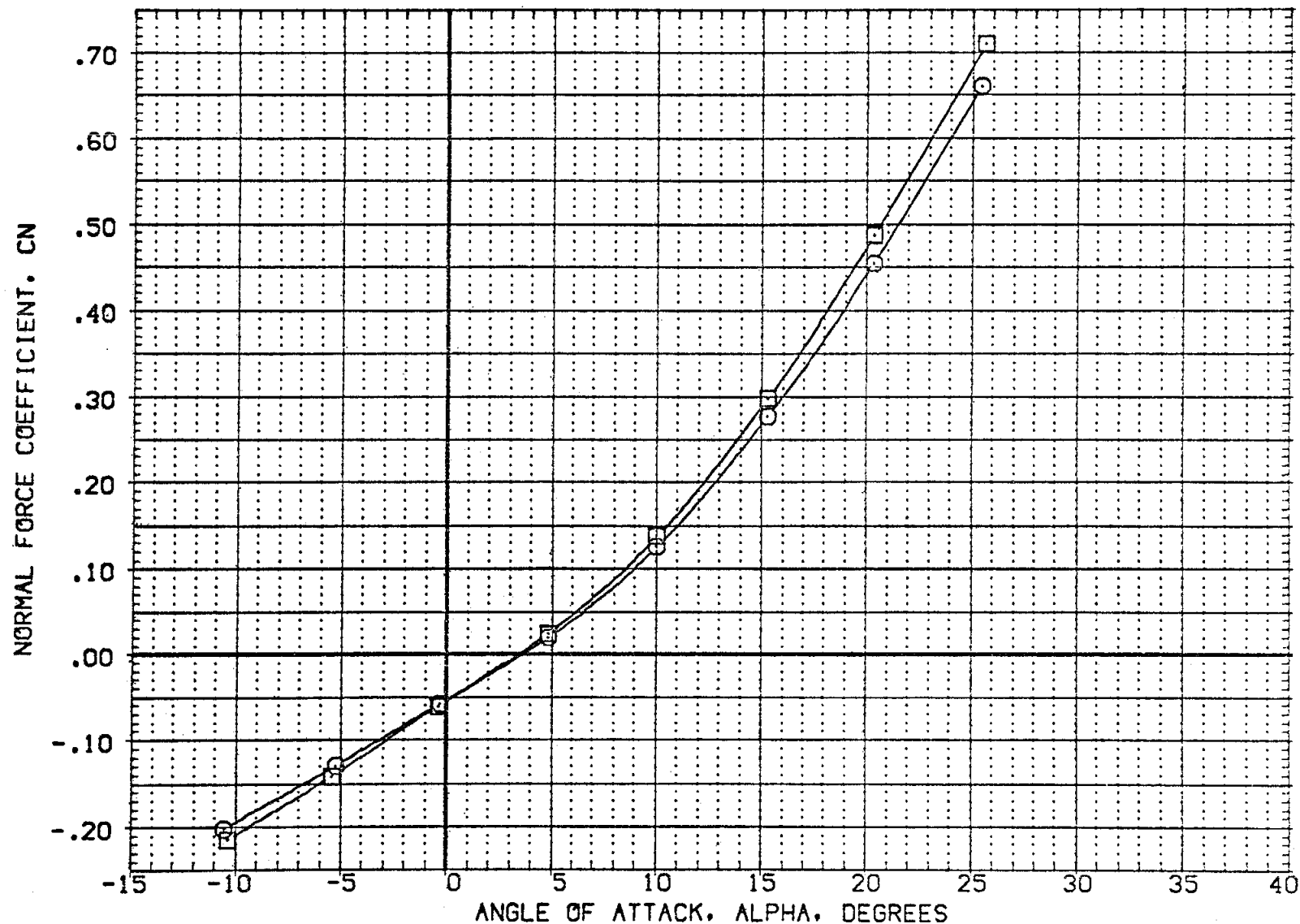


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BOFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH21ON)	CA105 CFHT109 MODEL 32-0 (0)NS2	PITCH UP	13.750	62.000	.000	50.000	SREF 2690.0000 SQ.FT.
(ZH201F)	CA105 CFHT109 MODEL 32 0(0) NS1	RCS OFF	13.750	.000	.000	.000	LREF 474.8100 IN.
							BREF 936.6800 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

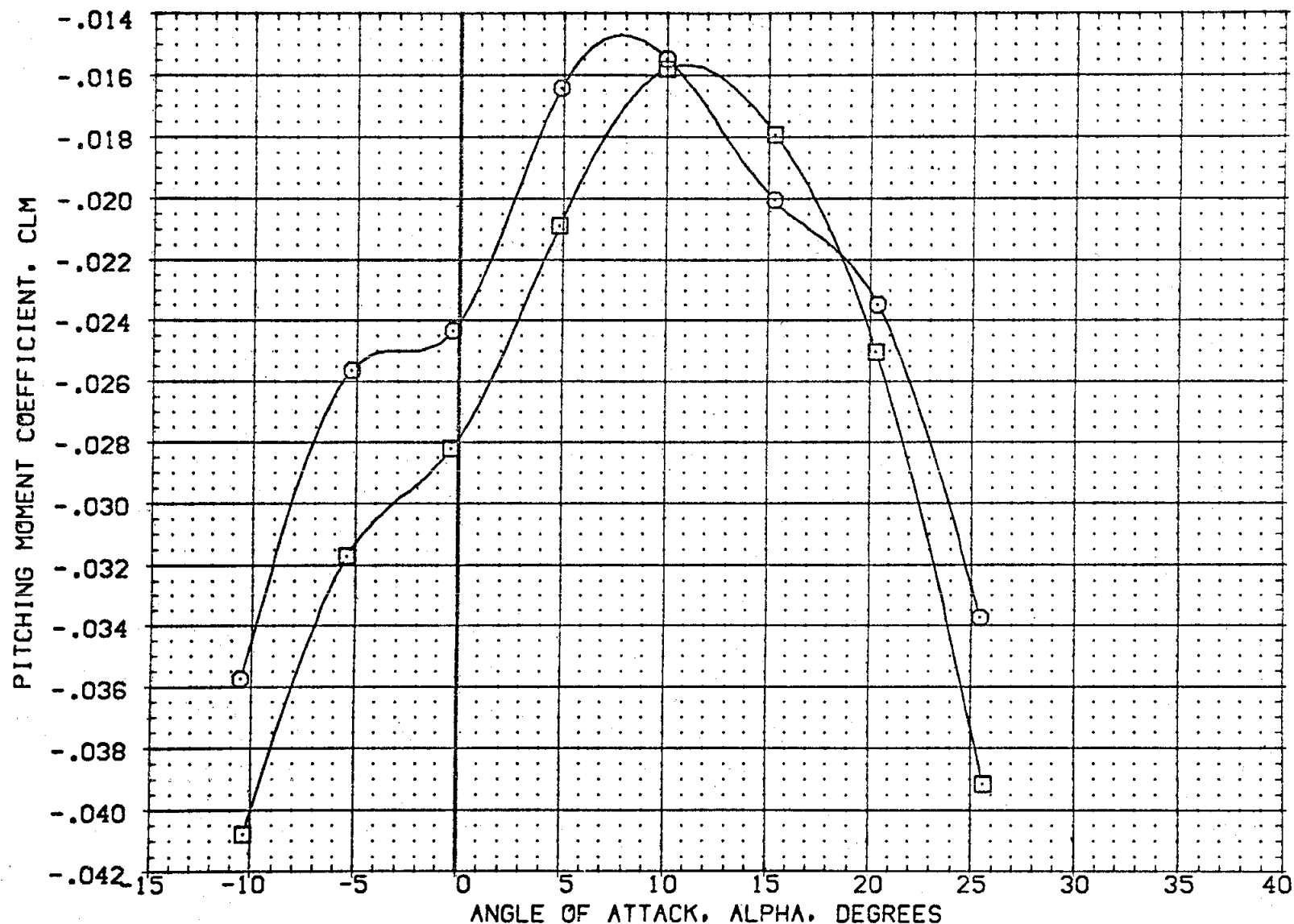




FIG 6 EFFECT OF BOFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (Z4210N)  0A105 CFHT109 MODEL 32-0 (0)N52  
 (Z4201F)  0A105 CFHT109 MODEL 32 0(0) N51

PITCH UP  
RCS OFF

BDFLAP  
13.750  
13.750

PCRCS  
62.000  
.000

ELEVON  
.000  
.000

Q-SIM  
50.000  
.000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100

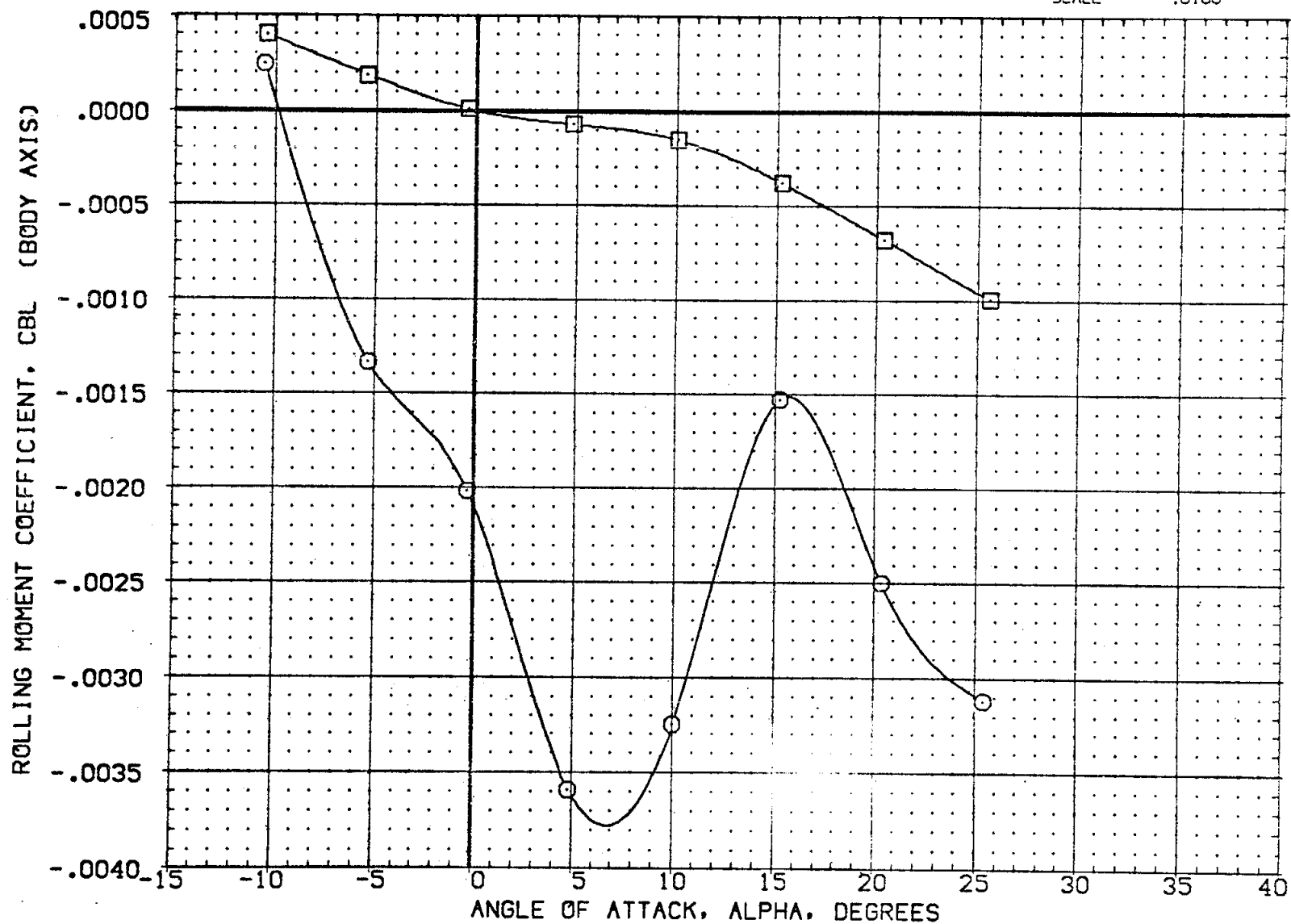


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH UP	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH210N)	0A105 CPFT109 MODEL 32-0 (0)N52	PITCH UP	13.750	62.000	.000	50.000	SREF 2690.0000 SQ.FT.
(ZH201F)	0A105 CPFT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000	LREF 474.8100 IN.
							BREF 936.6800 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

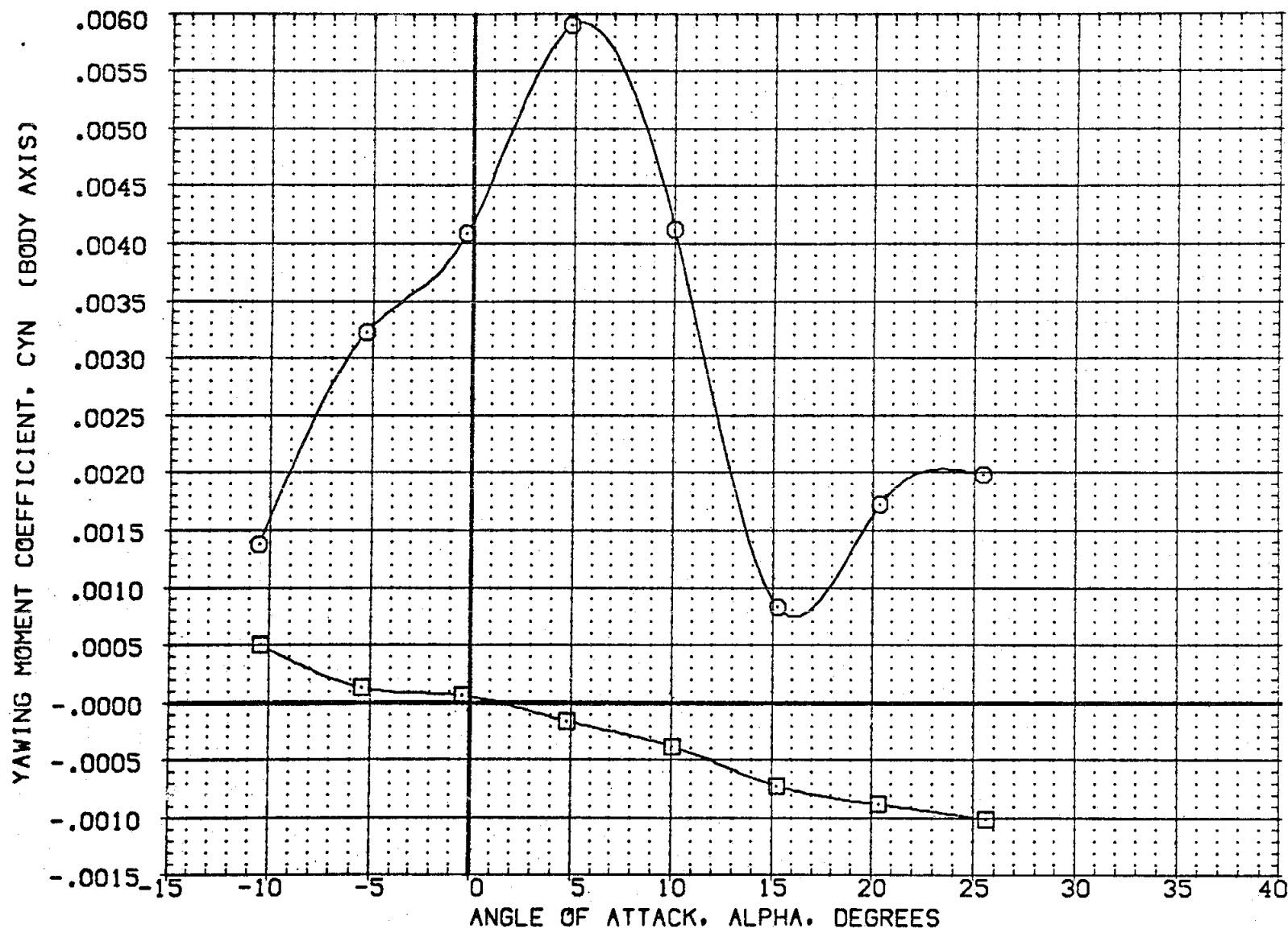


FIG 6 EFFECT OF BDFLAP DEFLECTION ON N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION ELEVON PCRC5 Q-SIM BOFLAP REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC5	Q-SIM	BOFLAP	REFERENCE INFORMATION
(CH2029)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-20.000	446.000	7.000	.000	SREF 2690.0000 SQ.FT.
(CH2022)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	7.000	.000	LREF 474.8100 IN.
						BREF 936.6800 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

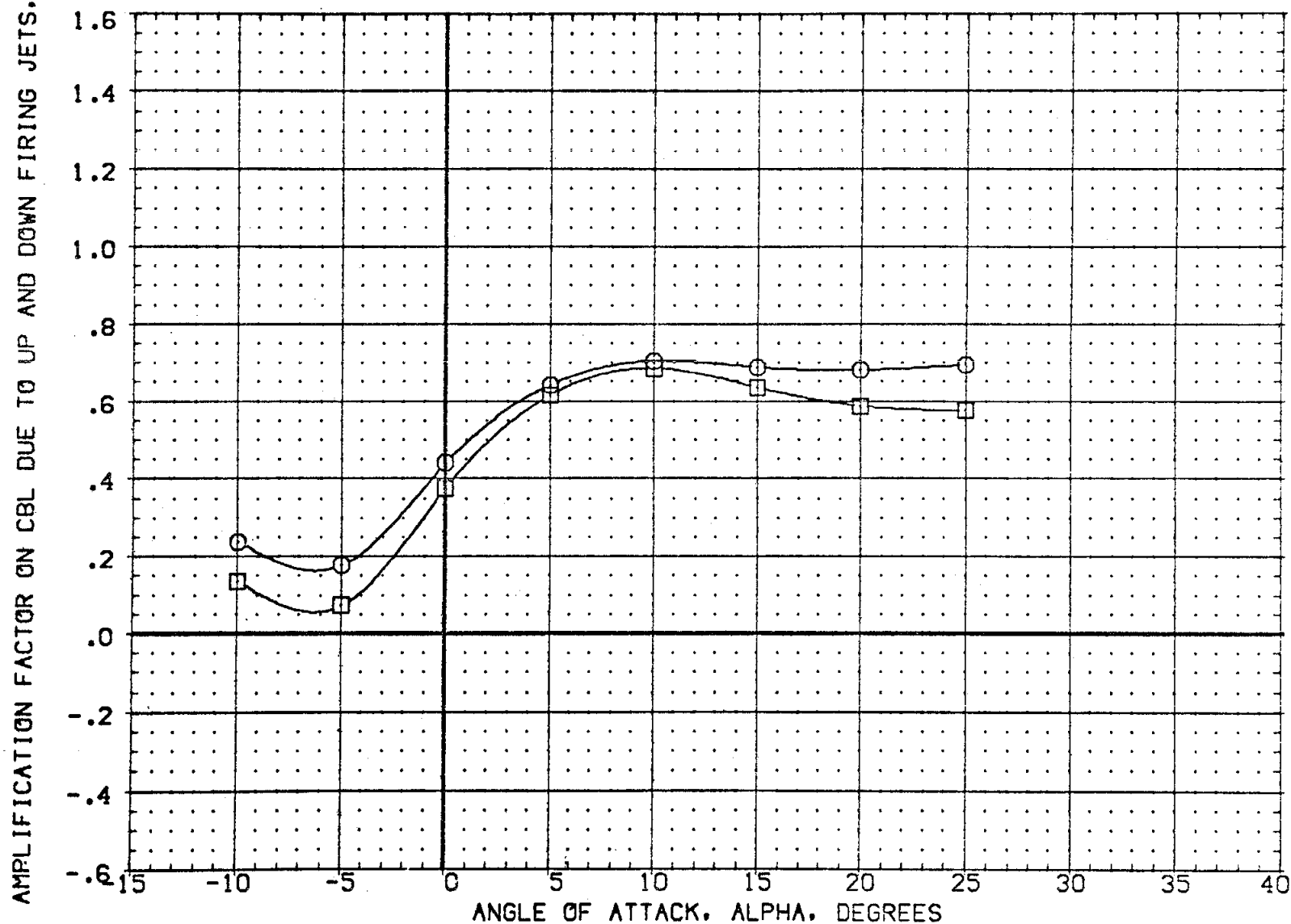


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2029)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL  
(CH2022)  $\circ$  0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL

ELEVON PCRC5 Q-SIM BOFLAP  
-20.000 446.000 7.000 .000  
.000 446.000 7.000 .000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

CROSS COUPLING FACTOR ON CLM DUE TO UP AND DOWN FIRING JETS, KM,BL2

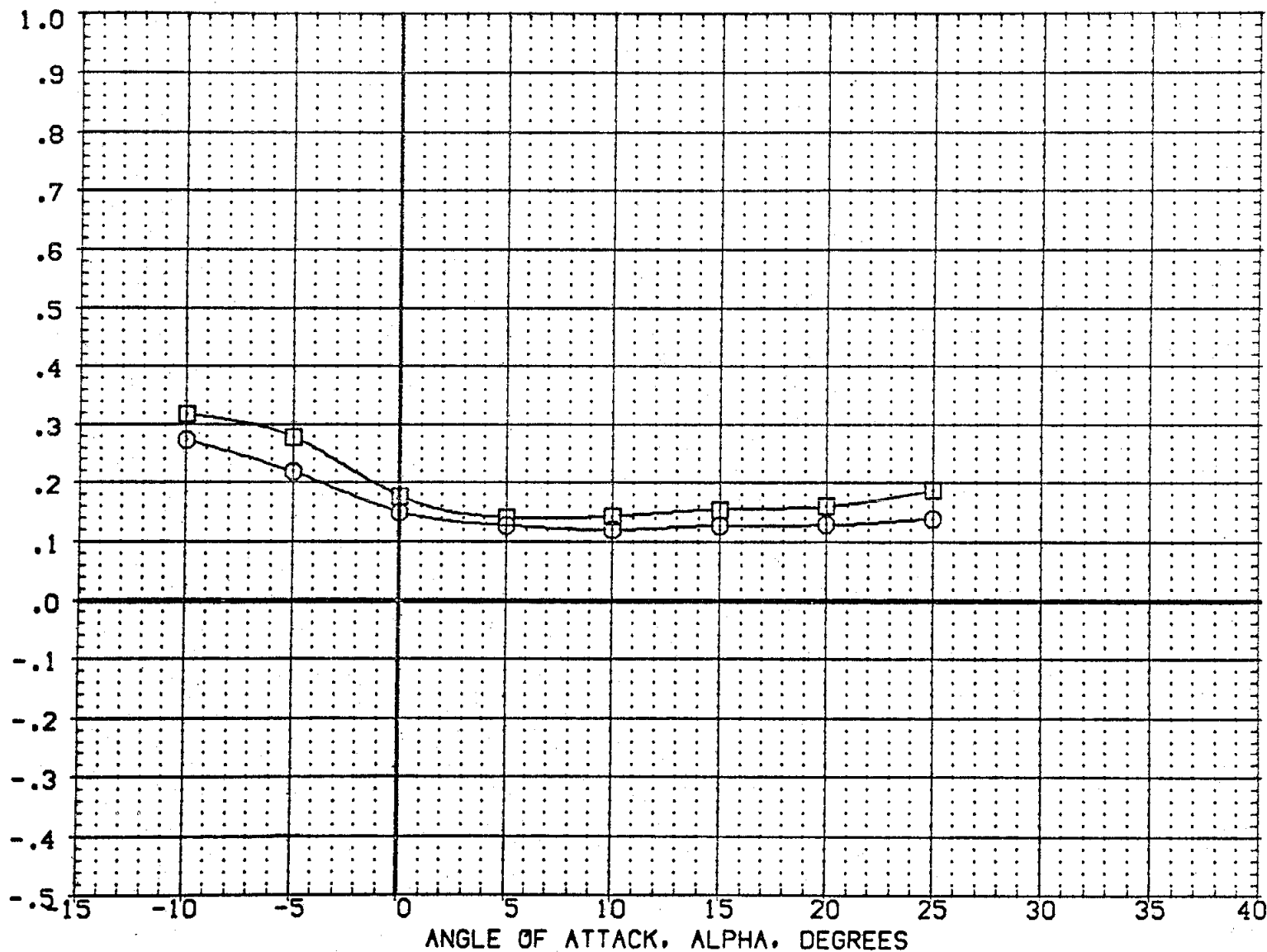


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON	PCRC	Q-SIM	BDFLAP	REFERENCE INFORMATION	
(CH2029)	○	0A105 CFHT109 MODEL 32-0	(0)N49N52	ROLL	-20.000	446.000	7.000	.000	SREF 2690.0000 SQ.FT.
(CH2022)	□	0A105 CFHT109 MODEL 32-0	(0)N49N52	ROLL	.000	446.000	7.000	.000	LREF 474.8100 IN.
									BREF 936.6800 IN.
									XMRP 1076.6700 IN. X0
									YMRP .0000 IN. Y0
									ZMRP 375.0000 IN. Z0
									SCALE .0100

CROSS COUPLING FACTOR ON CYN DUE TO UP AND DOWN FIRING JETS. KYN.L2

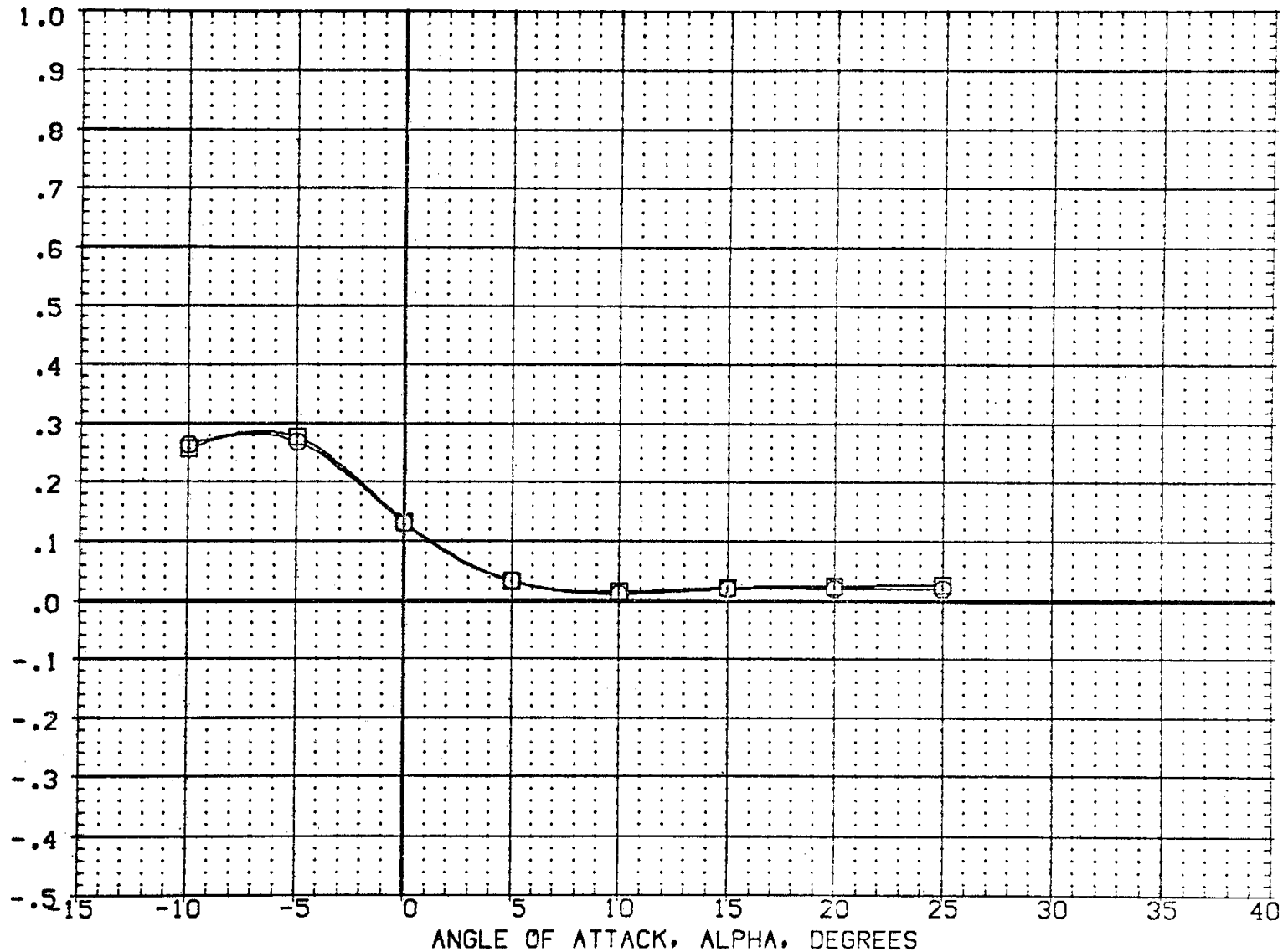


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION	
(CH2029)	0A105 CPFT109 MODEL 32-0 (0)N49N52 ROLL	-20.000	446.000	7.000	.000	SREF	2690.0000 SQ.FT.
(CH2022)	0A105 CPFT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	7.000	.000	LREF	474.8100 IN.
						BREF	936.6800 IN.
						XMRP	1076.6700 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

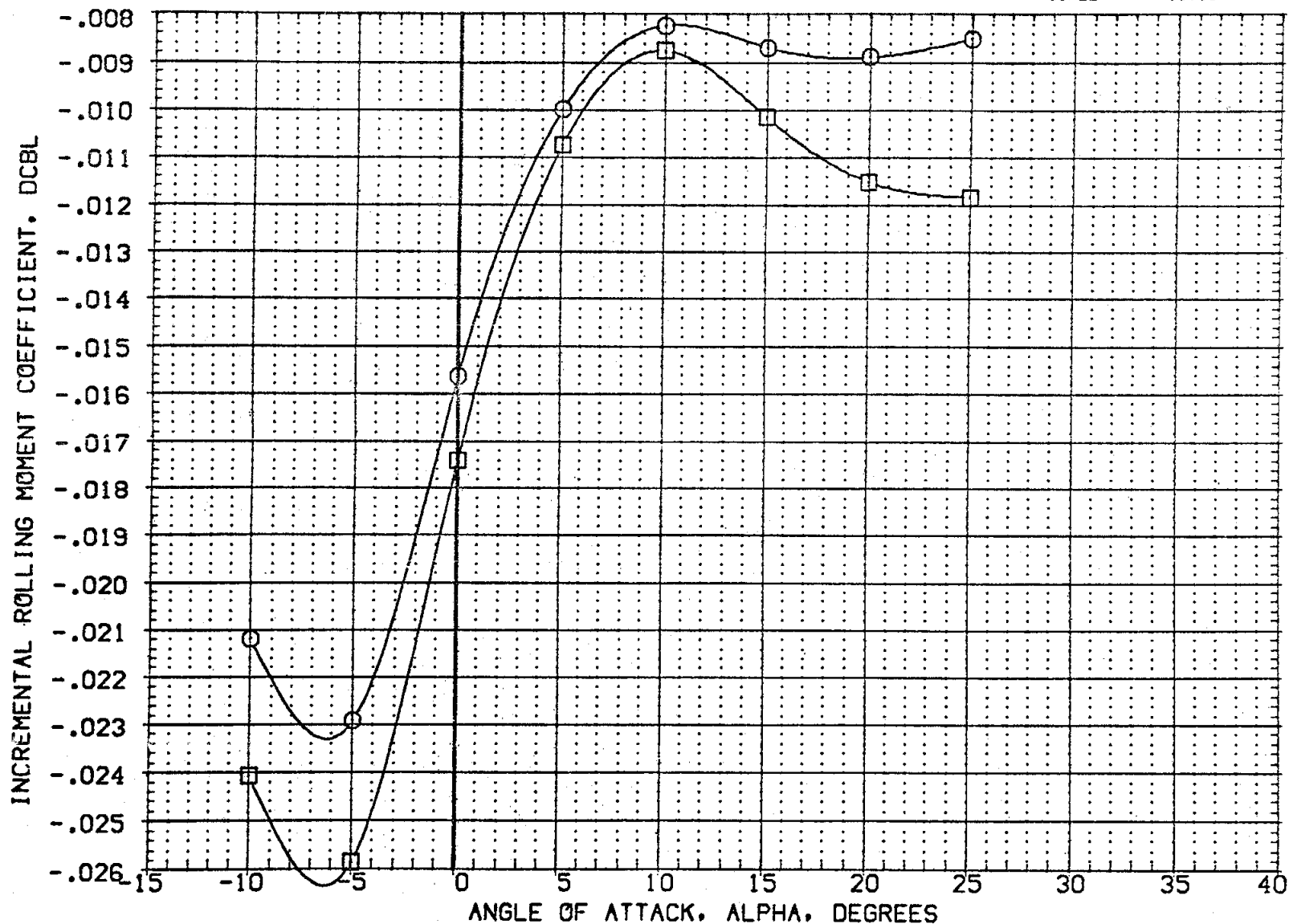


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BDFLAP	REFERENCE INFORMATION	
(CH2029)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-20.000	446.000	7.000	.000	SREF	2690.0000 SQ.FT.
(CH2022)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	7.000	.000	LREF	474.8100 IN.
						BREF	936.6800 IN.
						XMRP	1076.6700 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

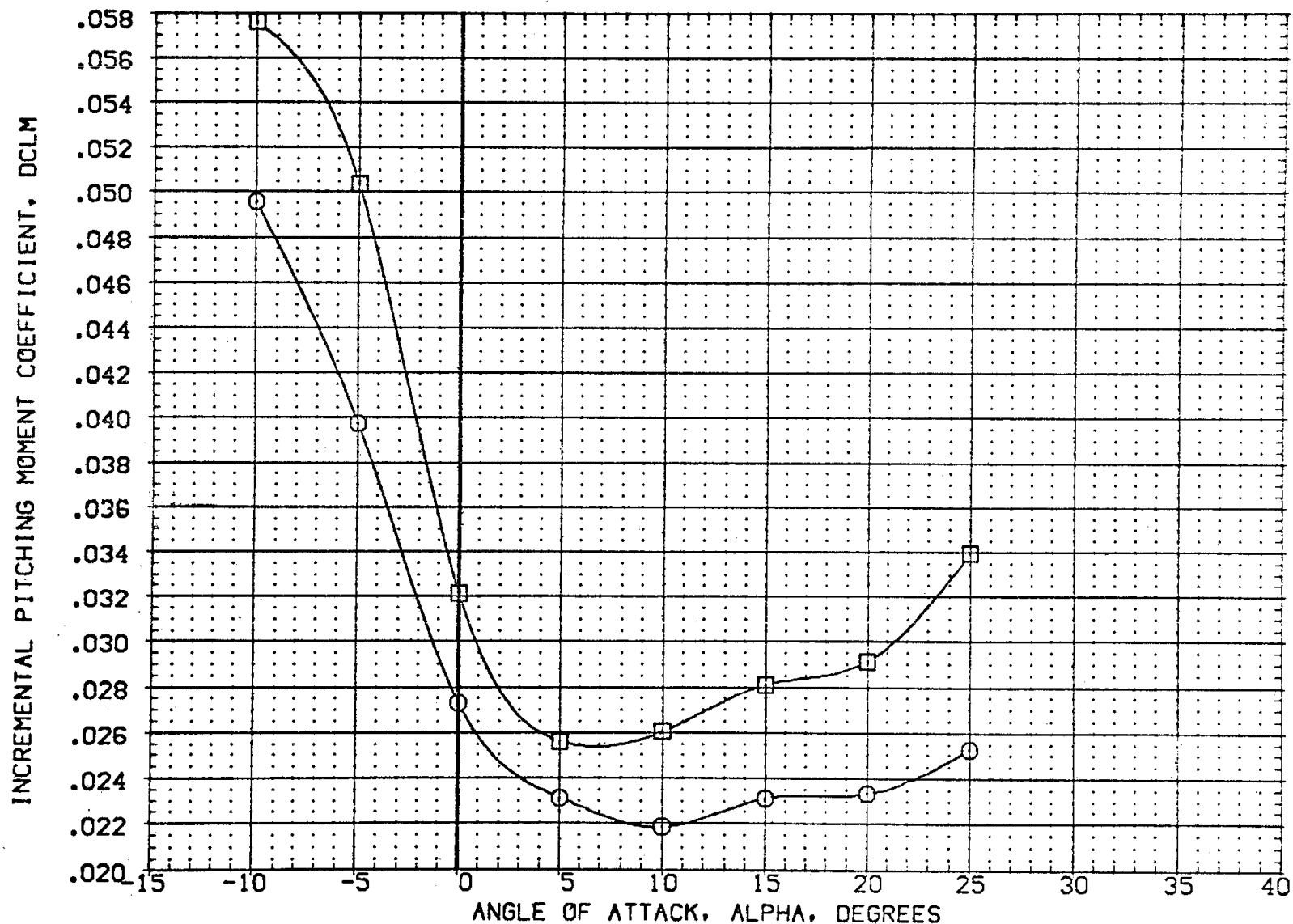


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2029)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL  
 (CH2022)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL

ELEVON	PCRC5	Q-SIM	BOFLAP	REFERENCE INFORMATION	
-20.000	446.000	7.000	.000	SREF	2690.0000 SQ.FT.
.000	446.000	7.000	.000	LREF	474.8100 IN.
				BREF	936.6800 IN.
				XMRP	1076.6700 IN. XO
				YMRP	.0000 IN. YO
				ZMRP	375.0000 IN. ZO
				SCALE	.0100

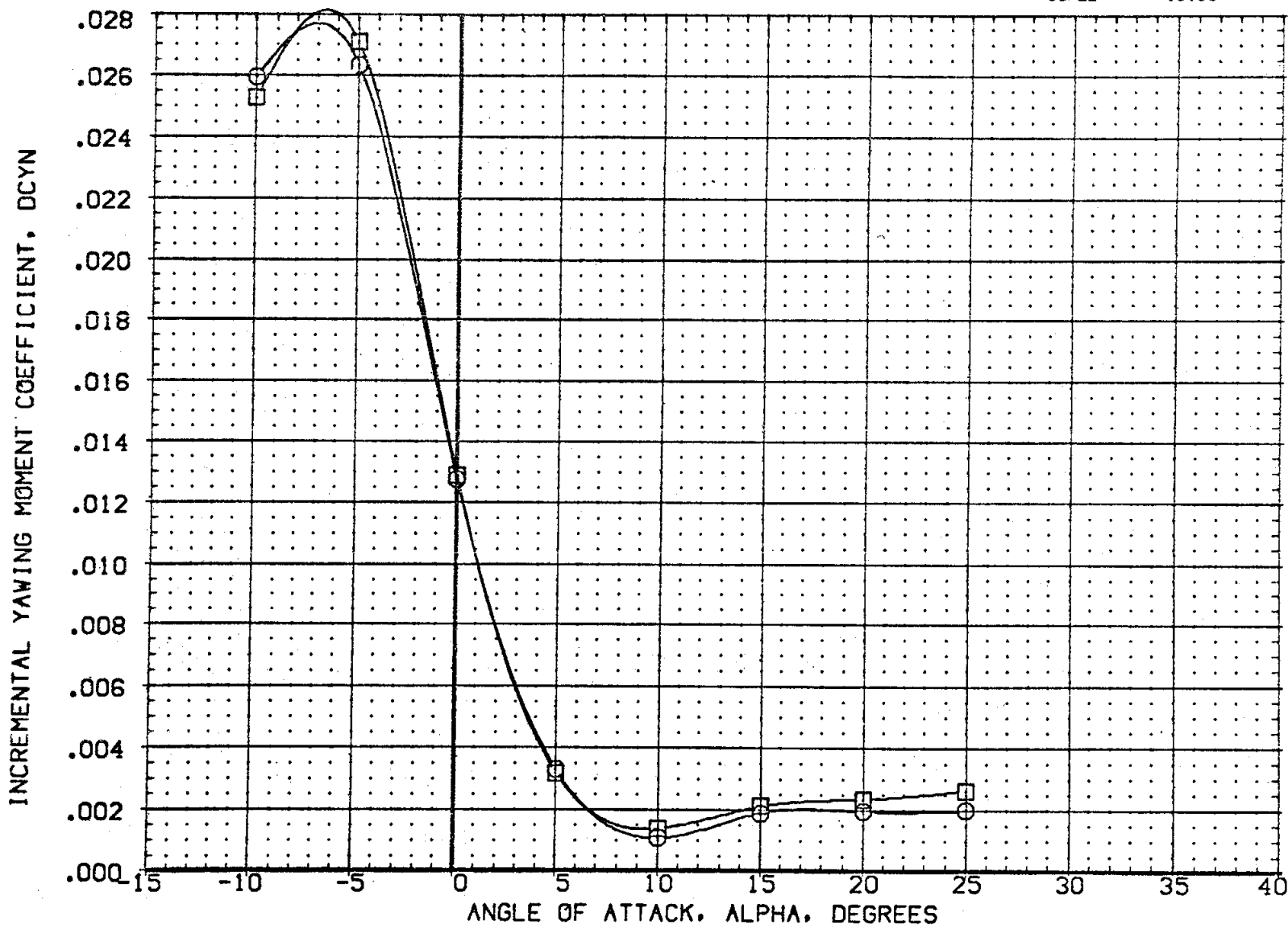


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(ZH229N)	QA105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	-20.000	446.000	7.000	.000	SREF	2690.0000 SQ.FT.
(ZH222N)	QA105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	.000	446.000	7.000	.000	LREF	474.8100 IN.
(ZH206F)	QA105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-20.000	.000	.000	.000	BREF	936.6800 IN.
(ZH203F)	QA105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	.000	XMRP	1076.6700 IN. XC
							YMRP	.0000 IN. YC
							ZMRP	375.0000 IN. ZC
							SCALE	.0100

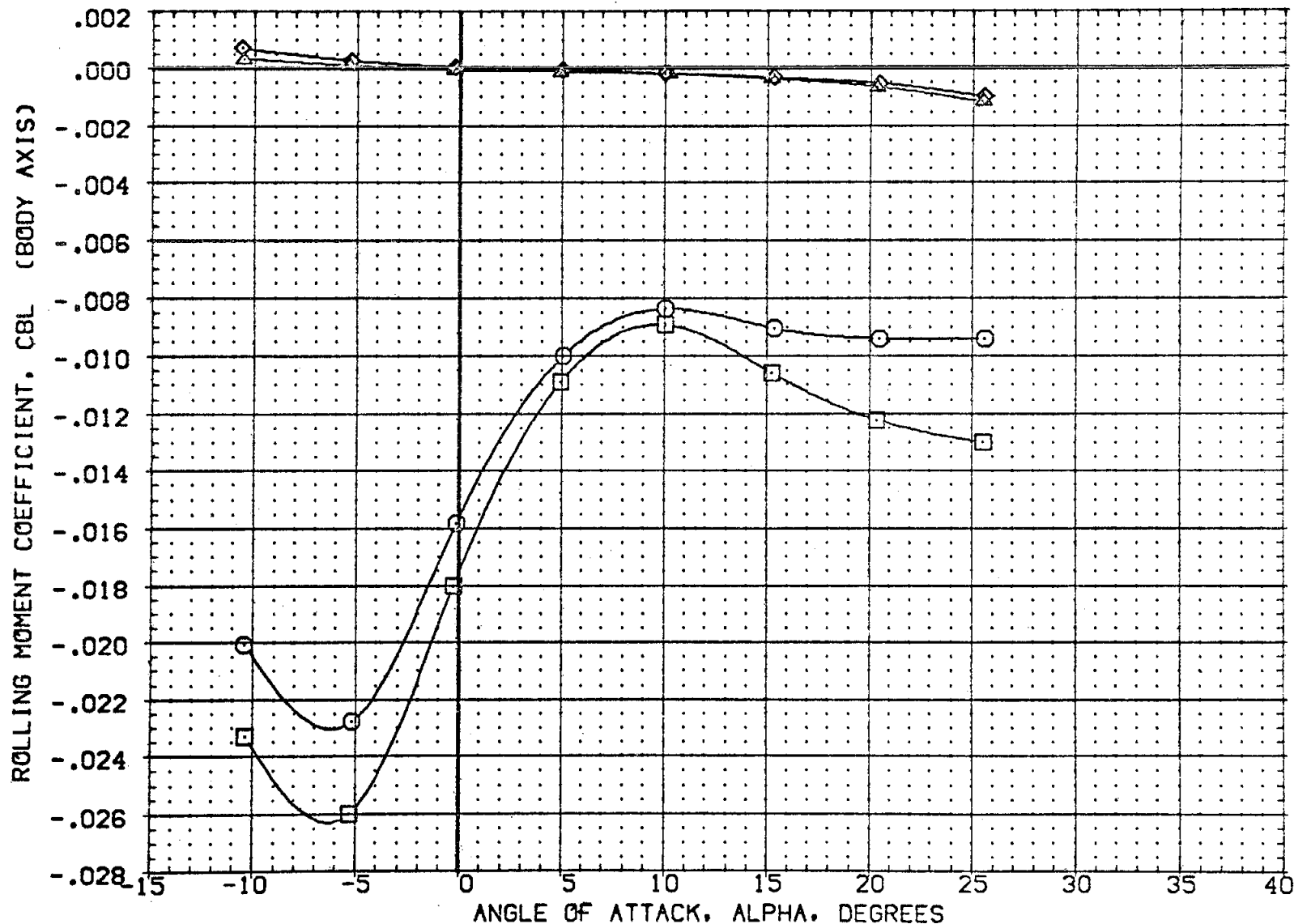


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

MA MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION
(ZH222N)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	-20.000	446.000	7.000	SREF 2690.0000 SQ.FT.
(ZH222N)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	.000	446.000	7.000	LREF 474.8100 IN.
(ZH206F)	0A105 CFHT109 MODEL 32 0(0) N49N52	RCS OFF	-20.000	.000	.000	BREF 936.6800 IN.
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N49N52	RCS OFF	.000	.000	.000	XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

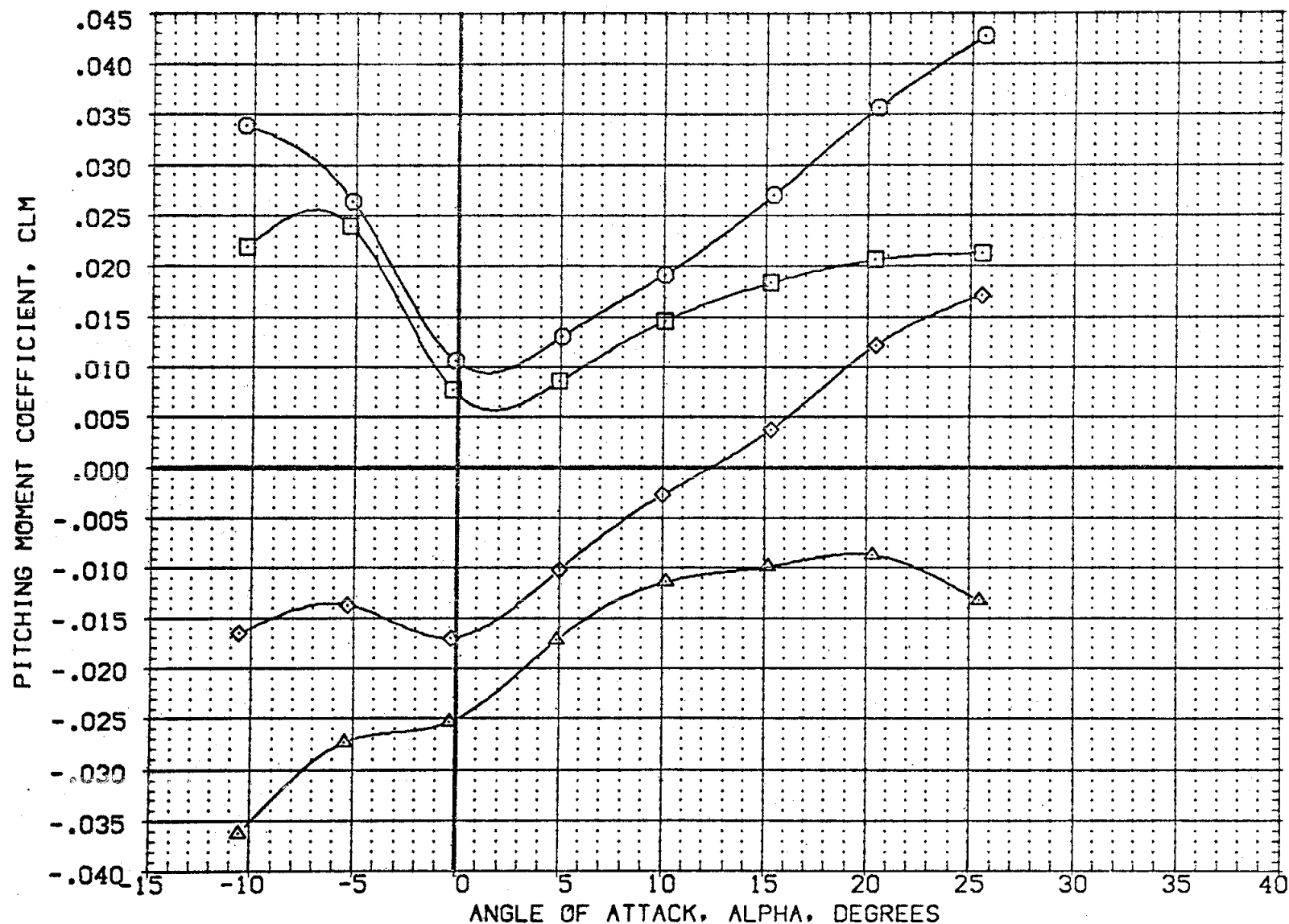


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(ZH229N)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	-20.000	446.000	7.000	.000	SREF	2690.0000 SQ.FT.
(ZH222N)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	.000	446.000	7.000	.000	LREF	474.8100 IN.
(ZH206F)	0A105 CFHT109 MODEL 32 0(0) N49N52	RCS OFF	-20.000	.000	.000	.000	BREF	936.6800 IN.
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N49N51	RCS OFF	.000	.000	.000	.000	XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

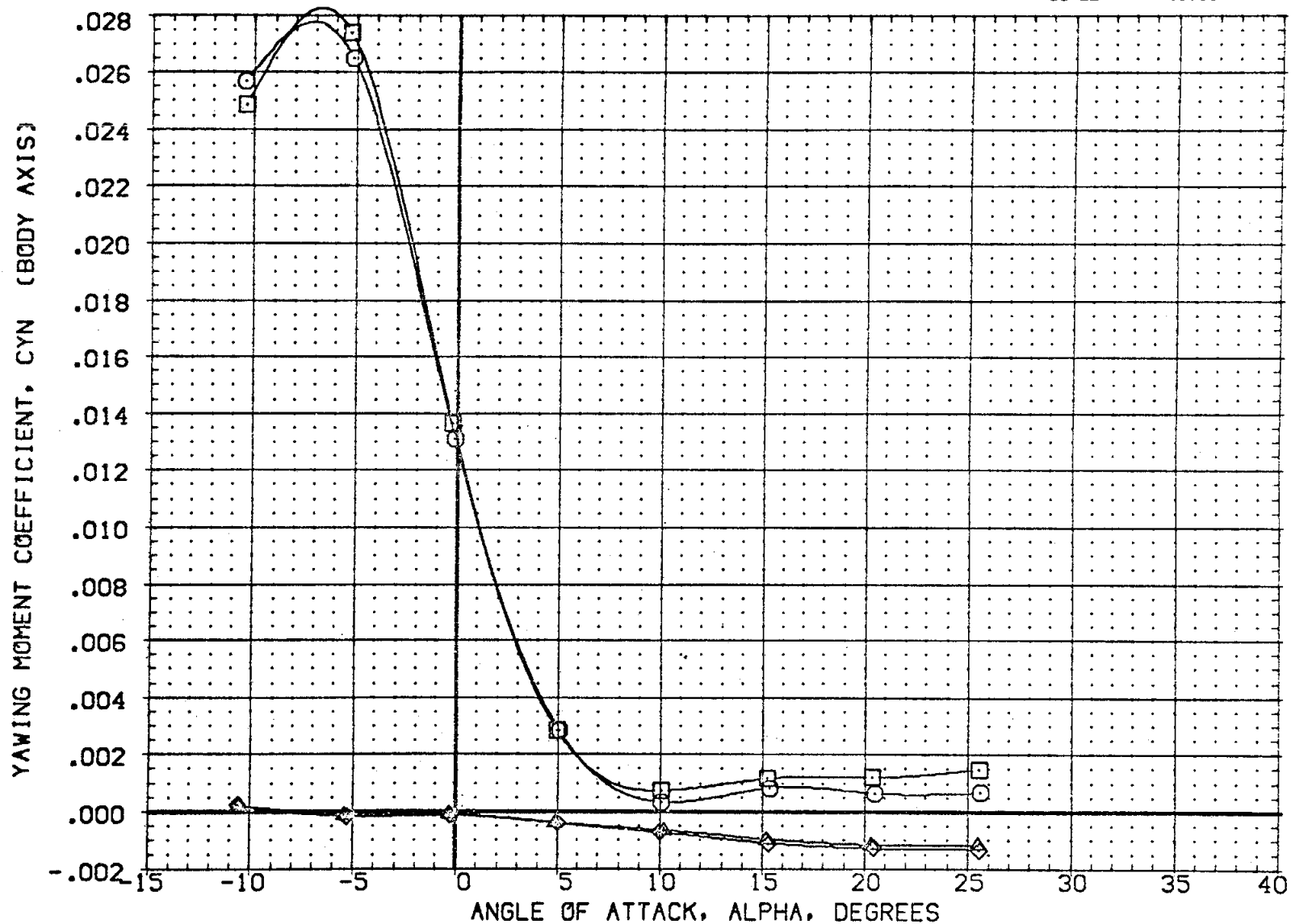


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

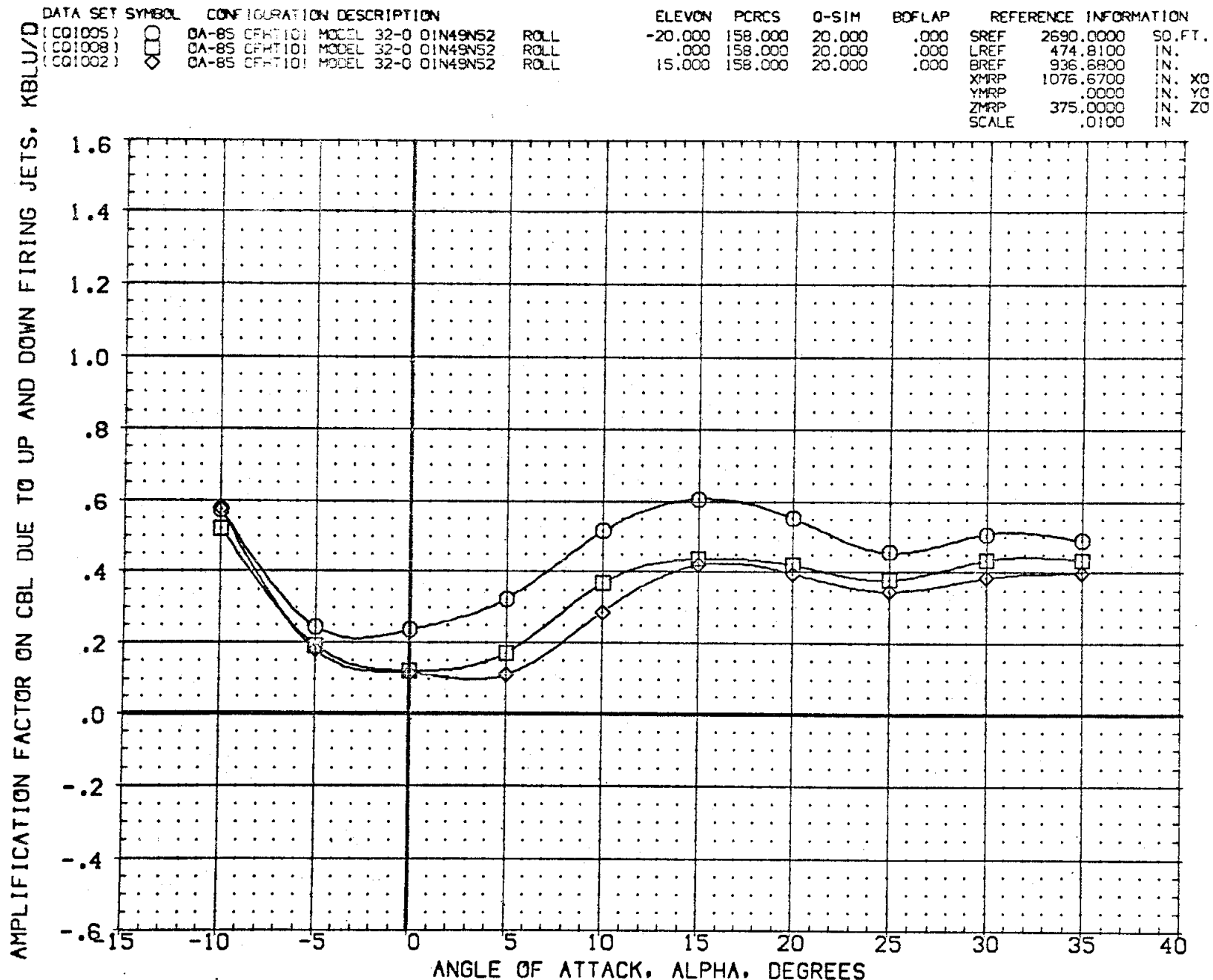


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(C01005)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	-20.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
(C01008)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	20.000	.000	LREF	474.8100	IN.
(C01002)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	15.000	158.000	20.000	.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. XO
						YMRP	.0000	IN. YO
						ZMRP	375.0000	IN. ZO
						SCALE	.0100	IN.

CROSS COUPLING FACTOR ON CLM DUE TO UP AND DOWN FIRING JETS. KM.BL2

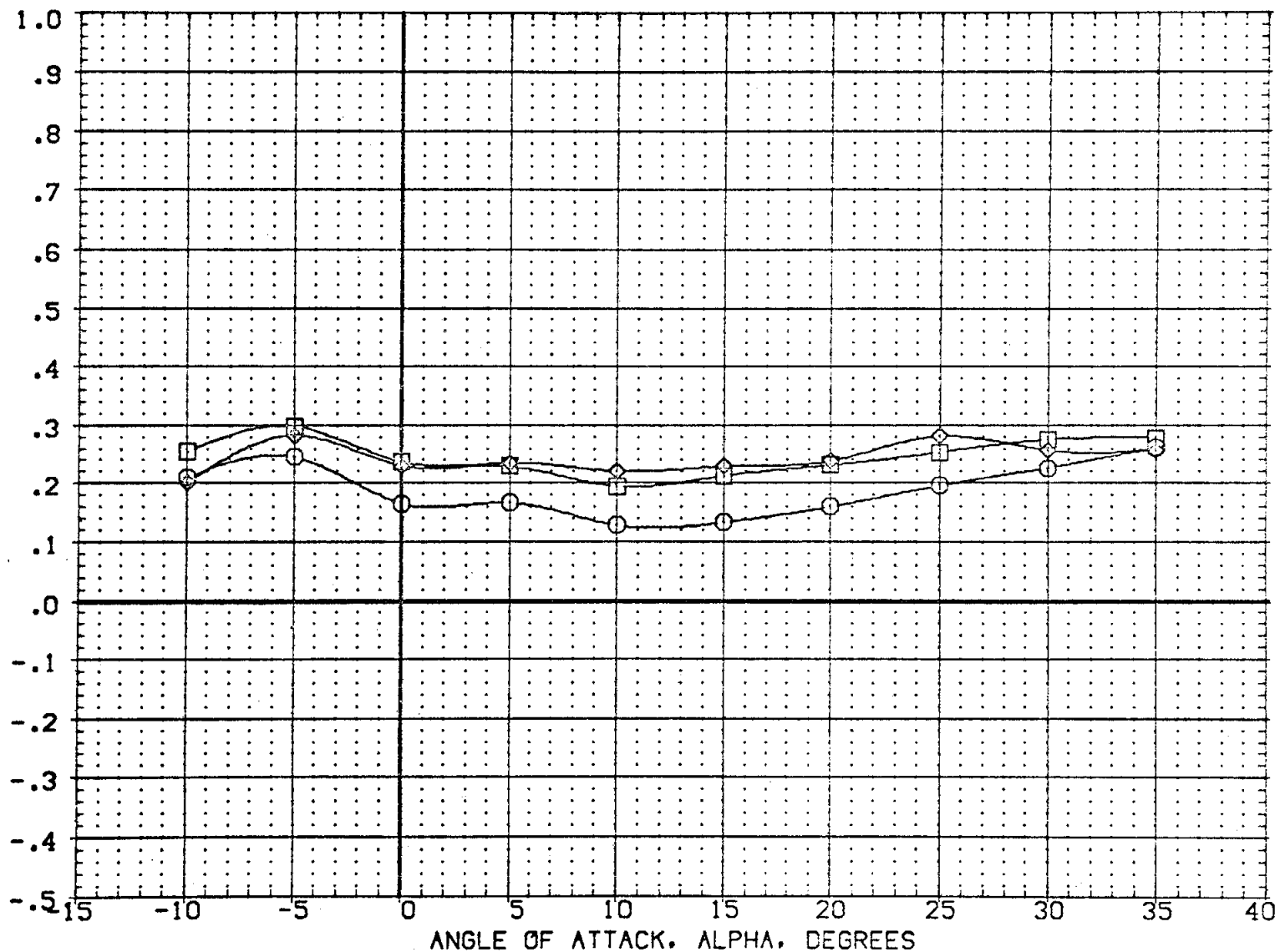


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(C01005)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	-20.000	158.000	20.000	.000	SREF	2690.0000	50. FT.
(C01008)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	20.000	.000	LREF	474.8100	IN.
(C01002)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	15.000	158.000	20.000	.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. XO
						YMRP	.0000	IN. YO
						ZMRP	375.0000	IN. ZO
						SCALE	.0100	IN

CROSS COUPLING FACTOR ON CYN DUE TO UP AND DOWN FIRING JETS. KYN.L2

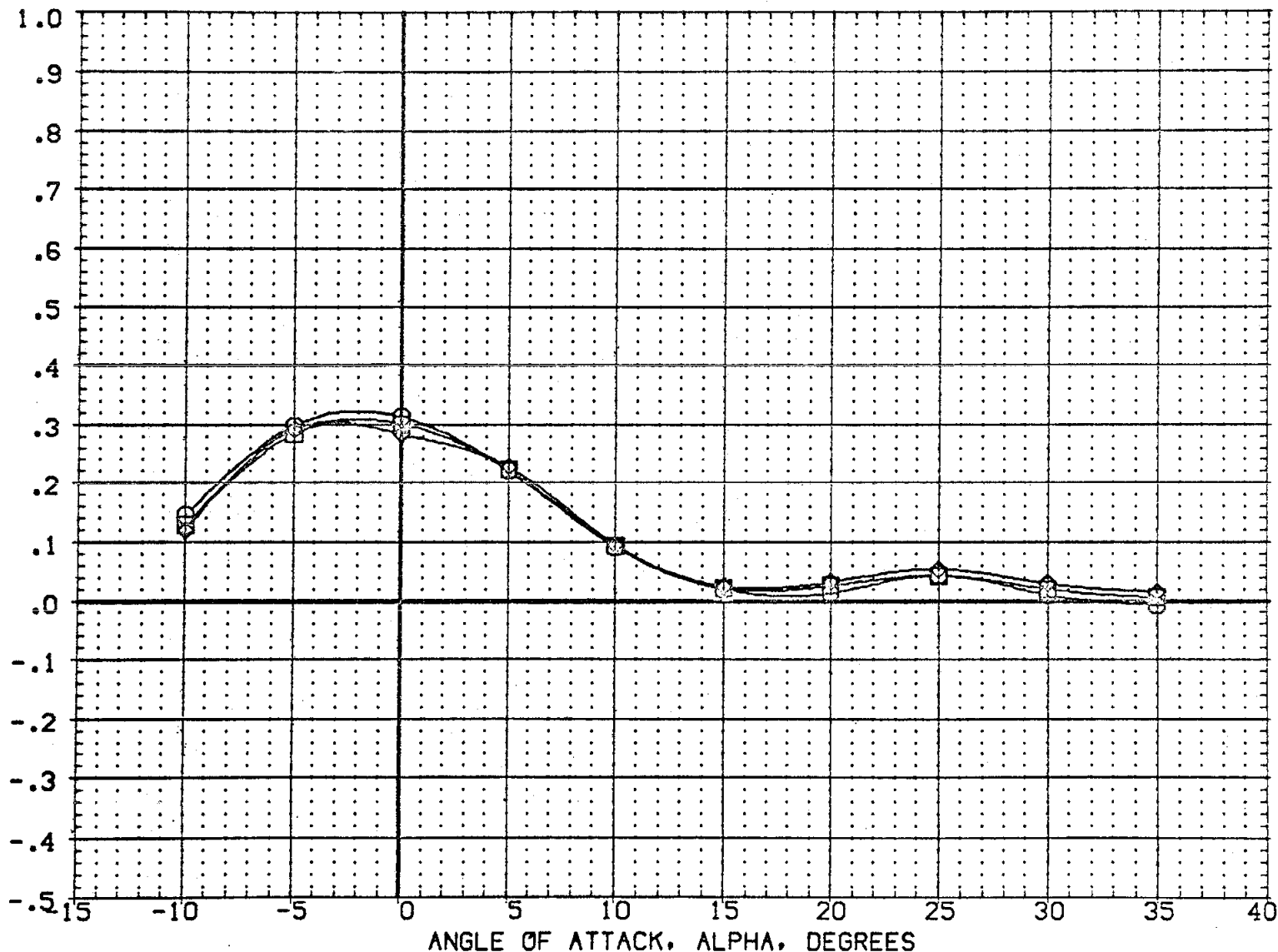


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCPCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(C01005)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	-20.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
(C01008)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	20.000	.000	LREF	474.8100	IN.
(C01002)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	15.000	158.000	20.000	.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	IN.

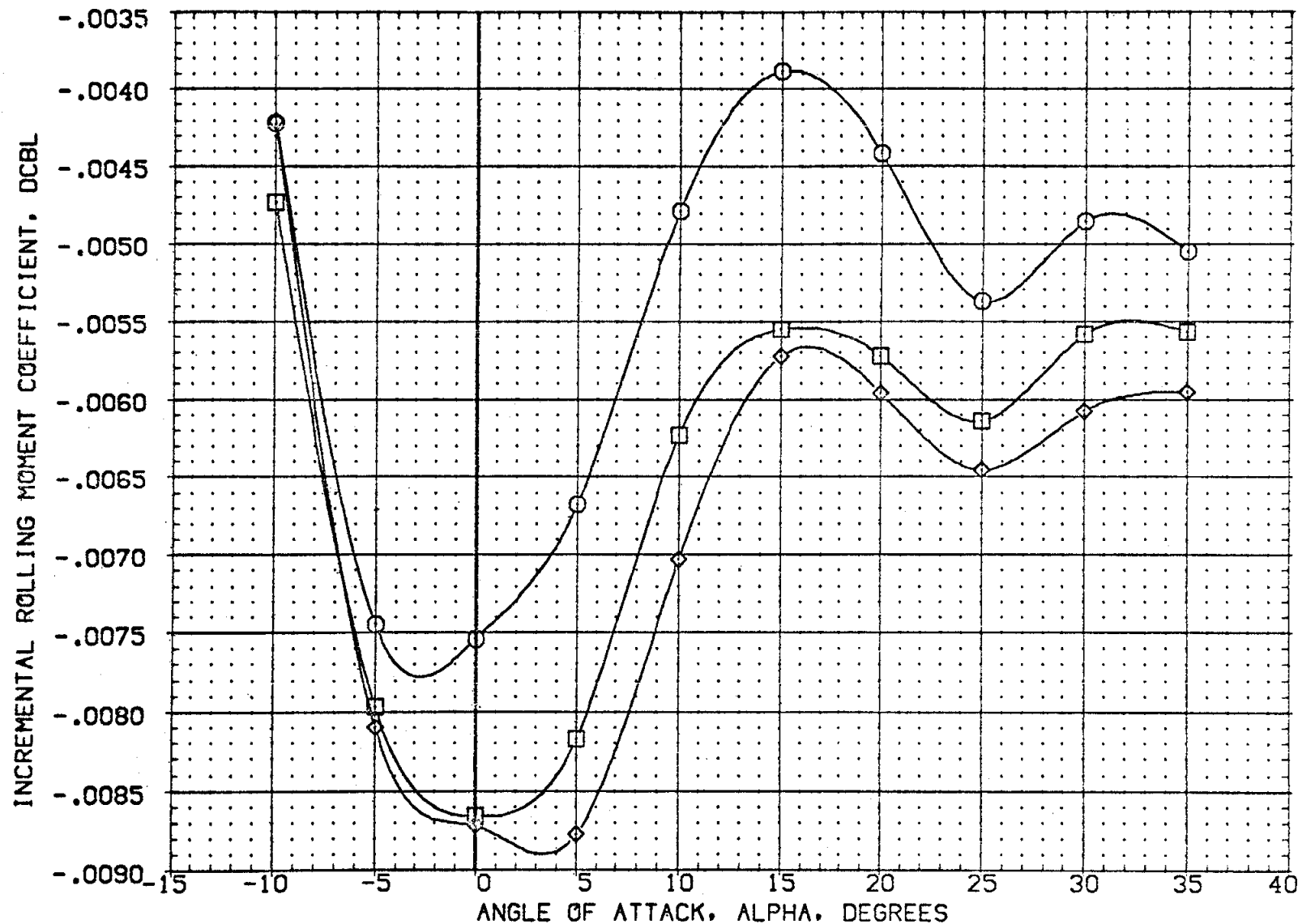


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BD FLAP	REFERENCE INFORMATION		
(C01005)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	-20.000	158.000	20.000	.000	SREF	2690.0000	SQ. FT.
(C01008)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	20.000	.000	LREF	474.8100	IN.
(C01002)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	15.000	158.000	20.000	.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. XC
						YMRP	.0000	IN. YC
						ZMRP	375.0000	IN. ZC
						SCALE	.0100	IN.

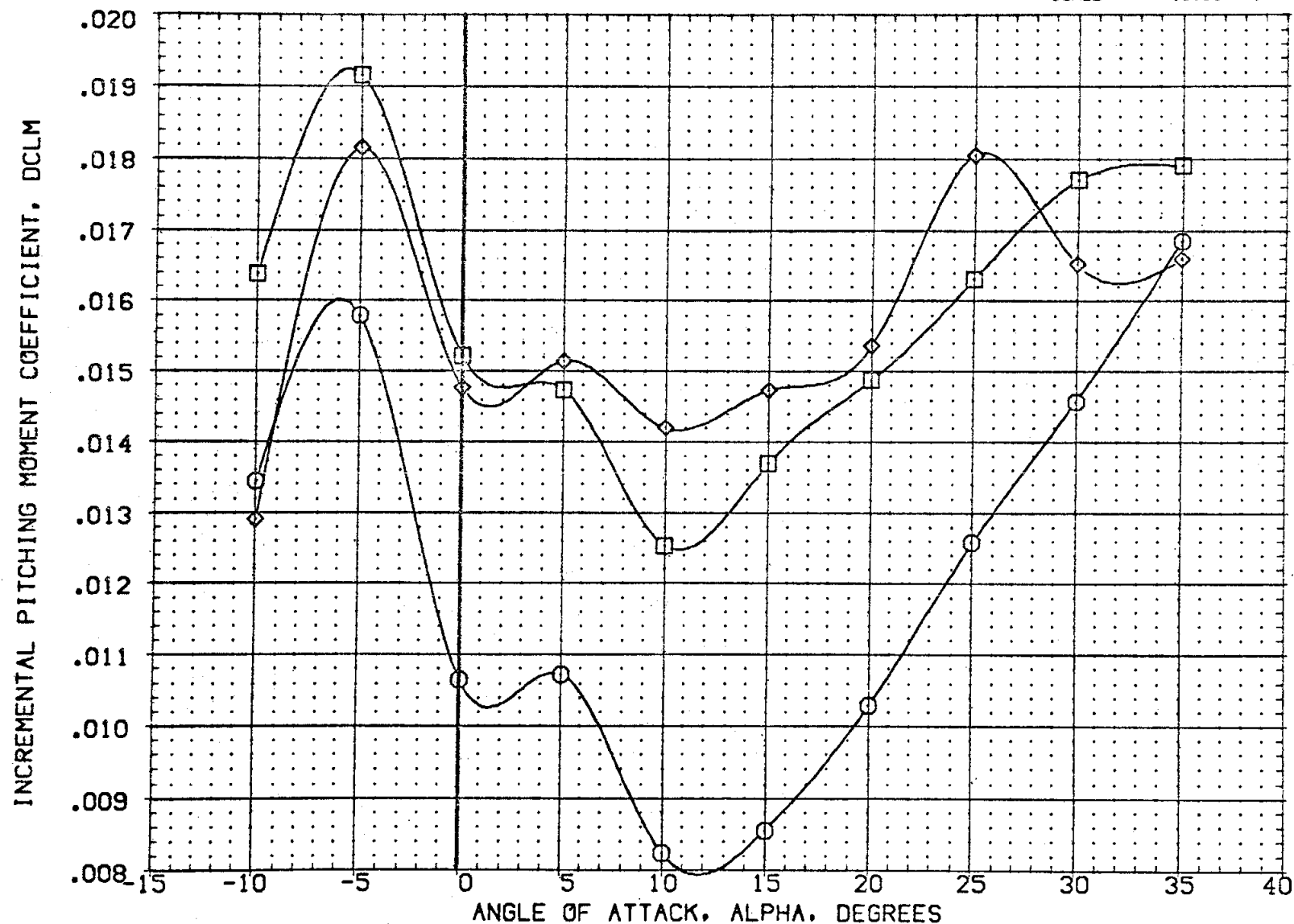


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CQ1005) ○ OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL  
 (CQ1008) □ OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL  
 (CQ1002) ◇ OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL

ELEVON PCRC5 Q-SIM BOFLAP  
 -20.000 158.000 20.000 .000  
 .000 158.000 20.000 .000  
 15.000 158.000 20.000 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. XO  
 YMRP .0000 IN. YO  
 ZMRP 375.0000 IN. ZO  
 SCALE .0100 IN

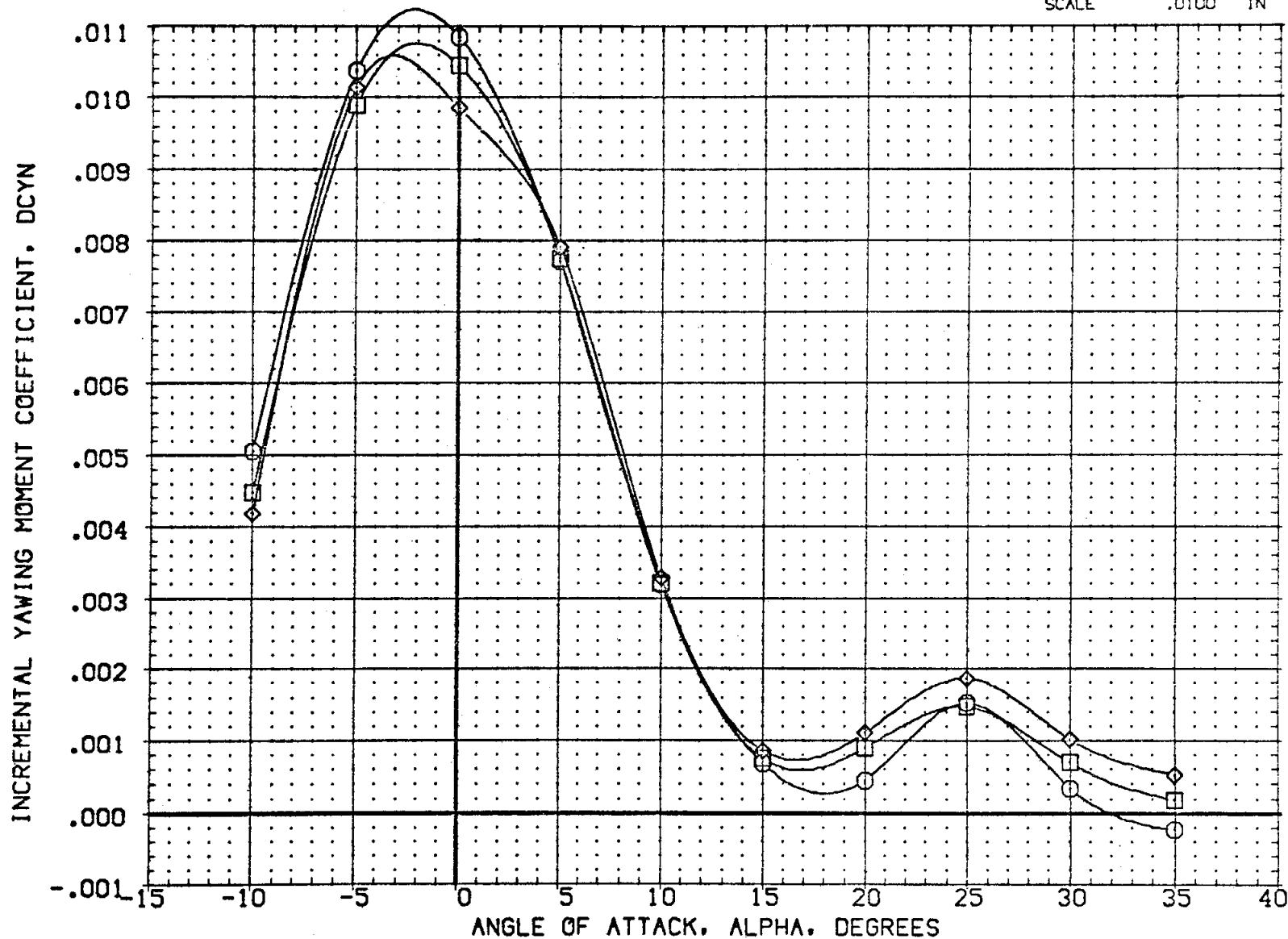


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION
(Z0105N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	-20.000	158.000	20.000	.000	SREF 2690.0000 SQ.FT.
(Z0108N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	20.000	.000	LREF 474.8100 IN.
(Z0102N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	15.000	158.000	20.000	.000	BREF 935.6800 IN.
(Z0102F)	OA-85 CFHT101 MODEL 32-0 01 N51 RCS OFF	-20.000	.000	.000	.000	XMRP 1075.6700 IN. X0
(Z0103F)	OA-85 CFHT101 MODEL 32-0 01 N52 RCS OFF	.000	.000	.000	.000	YMRP .0000 IN. Y0
(Z0101F)	OA-85 CFHT101 MODEL 32-0 01 N49 N50 RCS OFF	15.000	.000	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100 IN

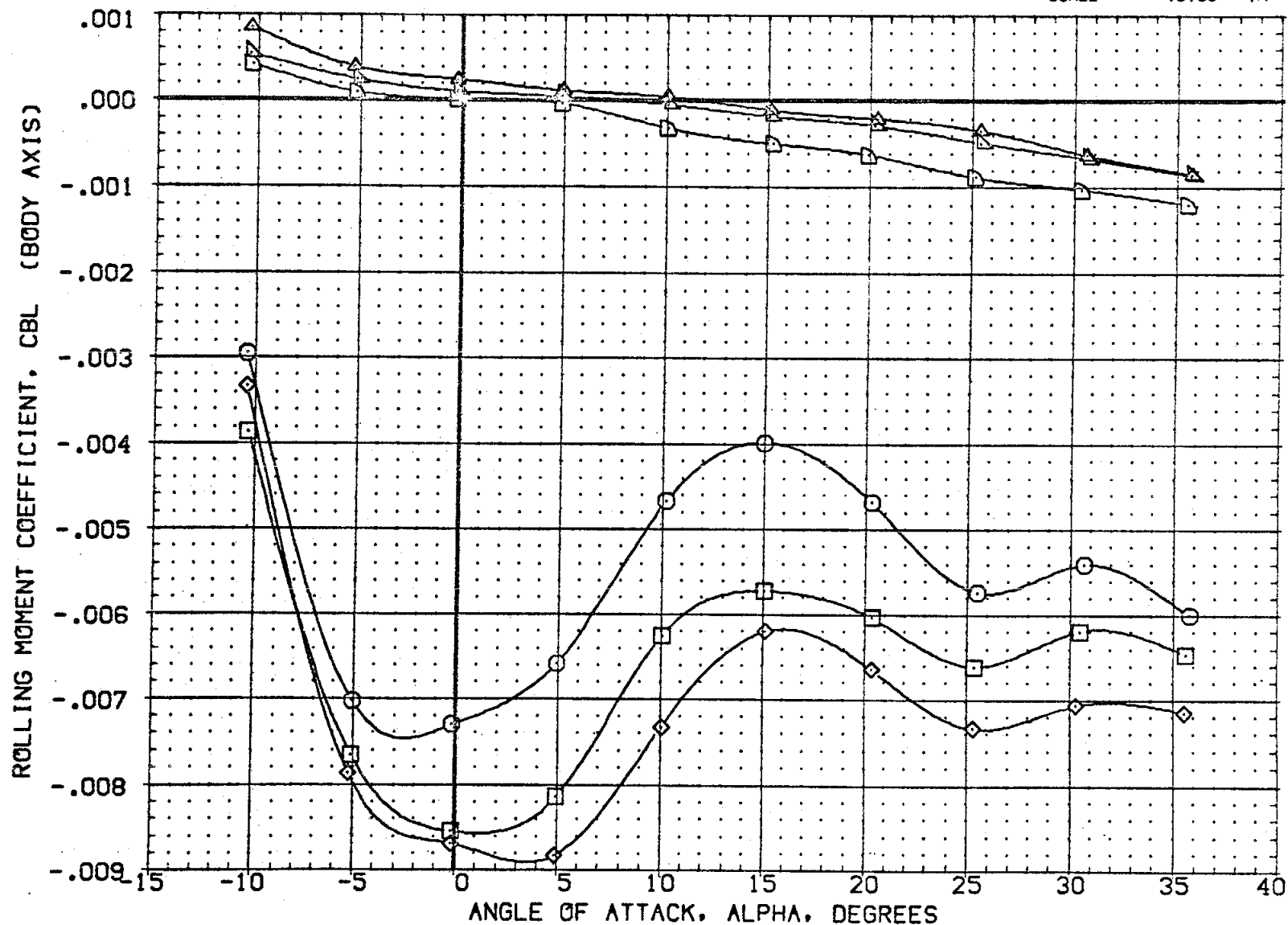


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BDFLAP	REFERENCE INFORMATION
(Z0105N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	-20.000	158.000	20.000	.000	SREF 2690.0000 SQ.FT.
(Z0108N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	20.000	.000	LREF 474.8100 IN.
(Z0102N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	15.000	158.000	20.000	.000	BREF 936.6900 IN.
(Z0102F)	OA-85 CFHT101 MODEL 32-0 01 N51 RCS OFF	-20.000	.000	.000	.000	XMRP 1076.6700 IN. X0
(Z0103F)	OA-85 CFHT101 MODEL 32-0 01 N52 RCS OFF	.000	.000	.000	.000	YMRP .0000 IN. Y0
(Z0101F)	OA-85 CFHT101 MODEL 32-0 01 N49 N50 RCS OFF	15.000	.000	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100 IN

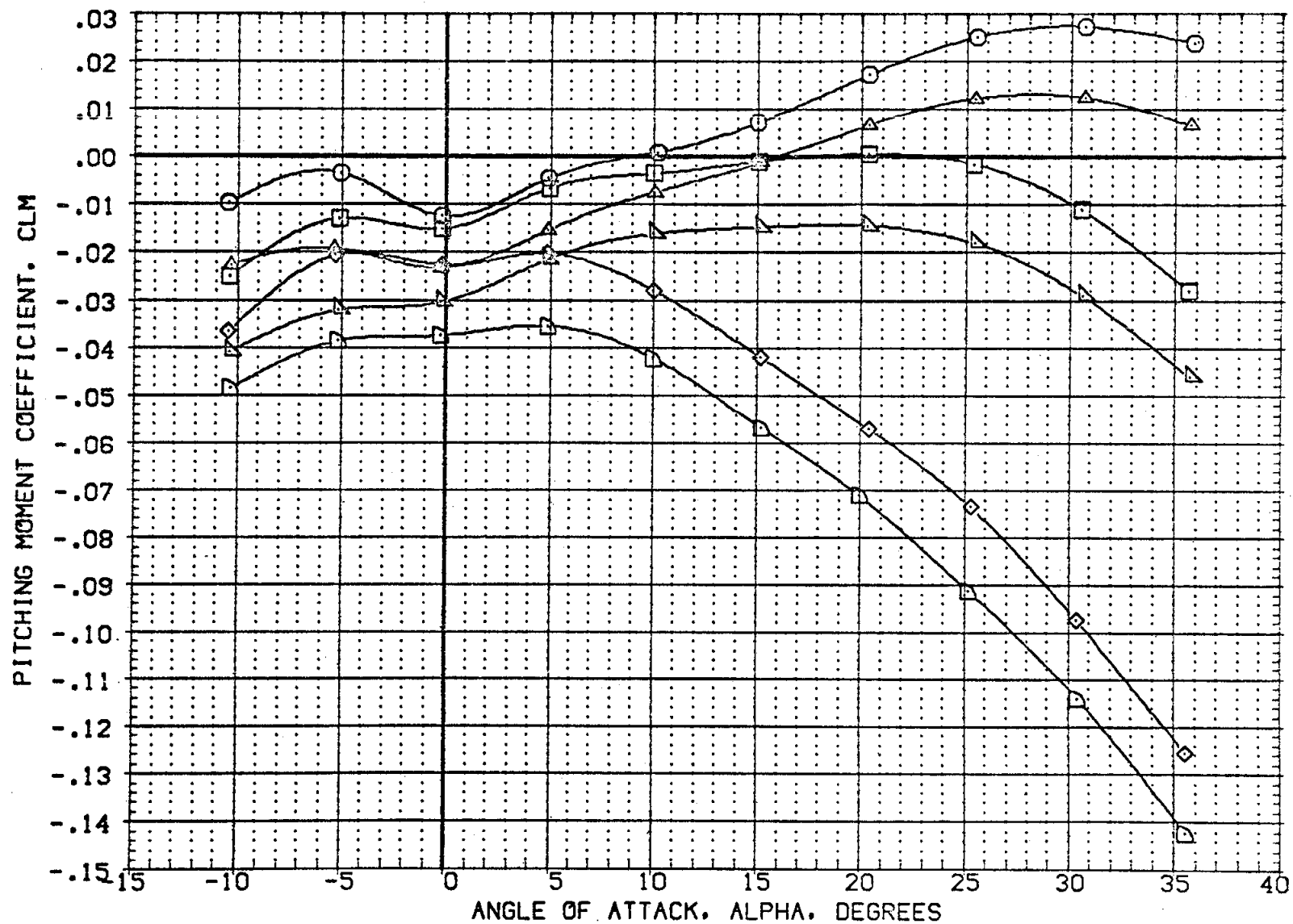


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(Z0105N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	-20.000	158.000	20.000	.000	SREF	2690.0000	50.FT.
(Z0106N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	20.000	.000	LREF	474.8100	IN.
(Z0102N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	15.000	158.000	20.000	.000	BREF	936.6800	IN.
(Z0102F)	OA-85 CFHT101 MODEL 32-0 01 N51 RCS OFF	-20.000	.000	.000	.000	XMRP	1076.6700	IN. X0
(Z0103F)	OA-85 CFHT101 MODEL 32-0 01 N52 RCS OFF	.000	.000	.000	.000	YMRP	.0000	IN. Y0
(Z0101F)	OA-85 CFHT101 MODEL 32-0 01 N49 N50 RCS OFF	15.000	.000	.000	.000	ZMRP	375.0000	IN. Z0
						SCALE	.0100	IN

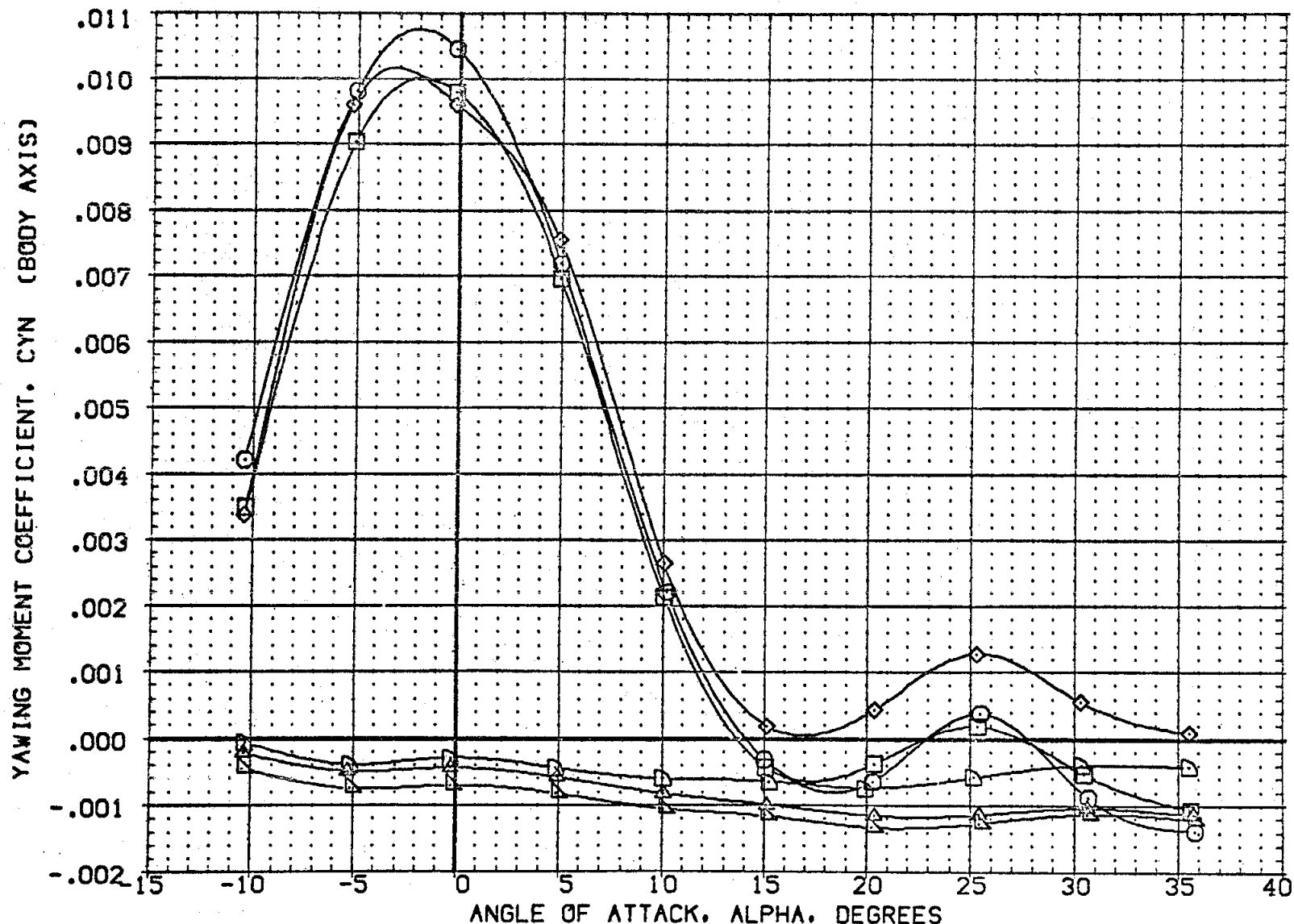


FIG 7 EFFECT OF ELEVON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(CH2032)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-15.000	158.000	20.000	.000	SREF	2690.0000	50.FT.
(C01008)	OA-85 CFHT101 MODEL 32-0 (0)N49N52 ROLL		158.000	20.000	.000	LREF	474.8100	IN.
(CH2031)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	15.000	158.000	20.000	.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

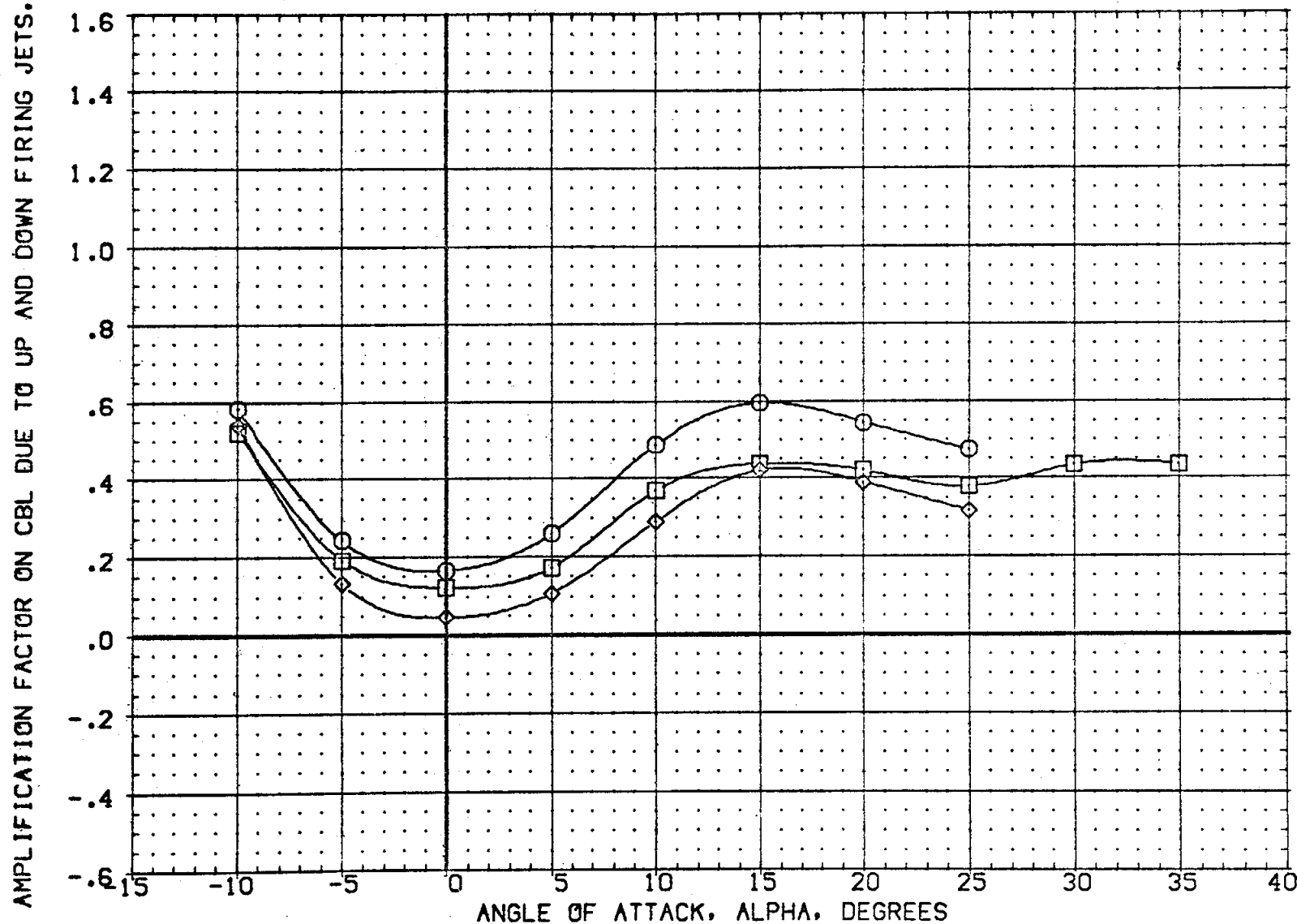


FIG 8 EFFECT OF AILRON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(CH2032)	0A105 CFHT109 MODEL 32-0 (0)N49N52	-15.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
(C01008)	0A-85 CFHT101 MODEL 32-0 01N49N52		158.000	20.000	.000	LREF	474.8100	IN.
(CH2031)	0A105 CFHT109 MODEL 32-0 (0)N49N52	15.000	158.000	20.000	.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

CROSS COUPLING FACTOR ON CLM DUE TO UP AND DOWN FIRING JETS. KM.BL2

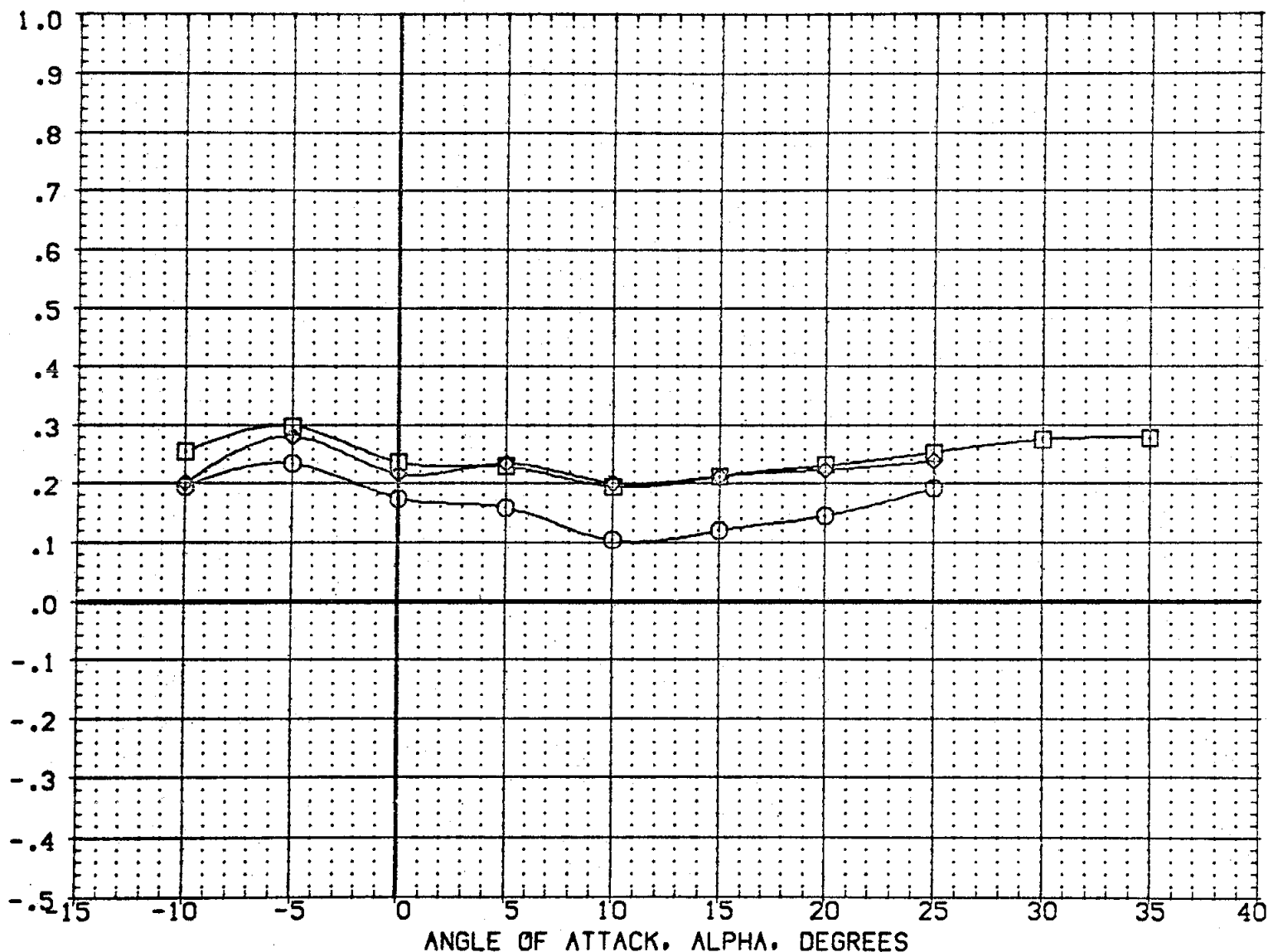


FIG 8 EFFECT OF AILERON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	PCRC	Q-SIM	BDFLAP	REFERENCE INFORMATION		
(CH2032)	0A105 CFHT109 MODEL 32-0 (0)N49N52	-15.000	158.000	20.000	.000	SREF	2690.0000	50.FT.
(C01008)	0A-85 CFHT101 MODEL 32-0 01N49N52		158.000	20.000	.000	LREF	474.8100	IN.
(CH2031)	0A105 CFHT109 MODEL 32-0 (0)N49N52	15.000	158.000	20.000	.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

CROSS COUPLING FACTOR ON CYN DUE TO UP AND DOWN FIRING JETS. KYN.L2

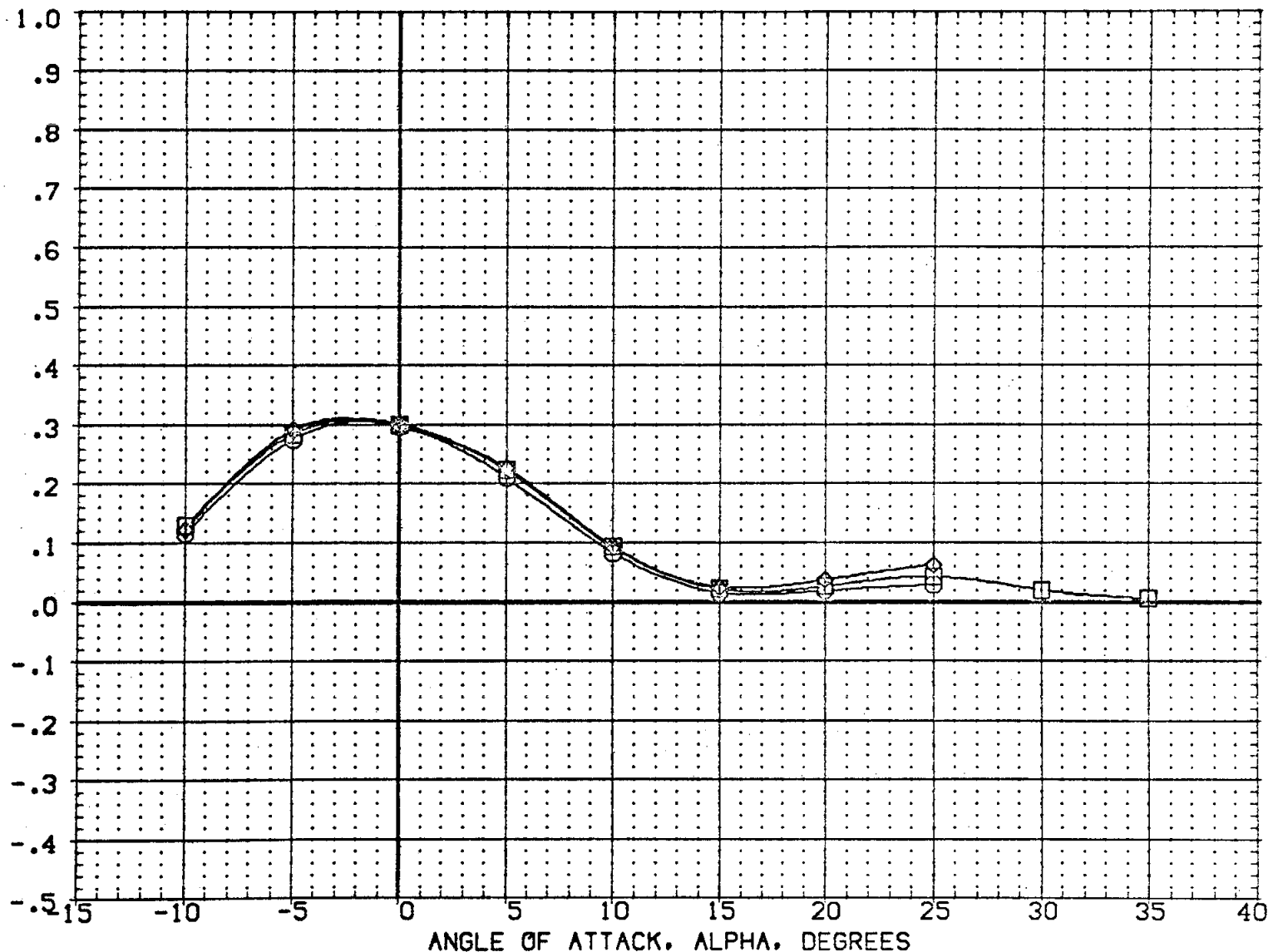


FIG 8 EFFECT OF AILERON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2032) □ OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL  
 (C01008) □ OA-85 CFHT101 MODEL 32-0 (0)N49N52 ROLL  
 (CH2031) ◇ OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL

AILRON	PCRC5	0-SIM	BDFLAP	REFERENCE INFORMATION		
-15.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
			.000	LREF	474.8100	IN.
15.000	158.000	20.000	.000	BREF	936.6800	IN.
				XMRP	1076.6700	IN. X0
				YMRP	.0000	IN. Y0
				ZMRP	375.0000	IN. Z0
				SCALE	.0100	

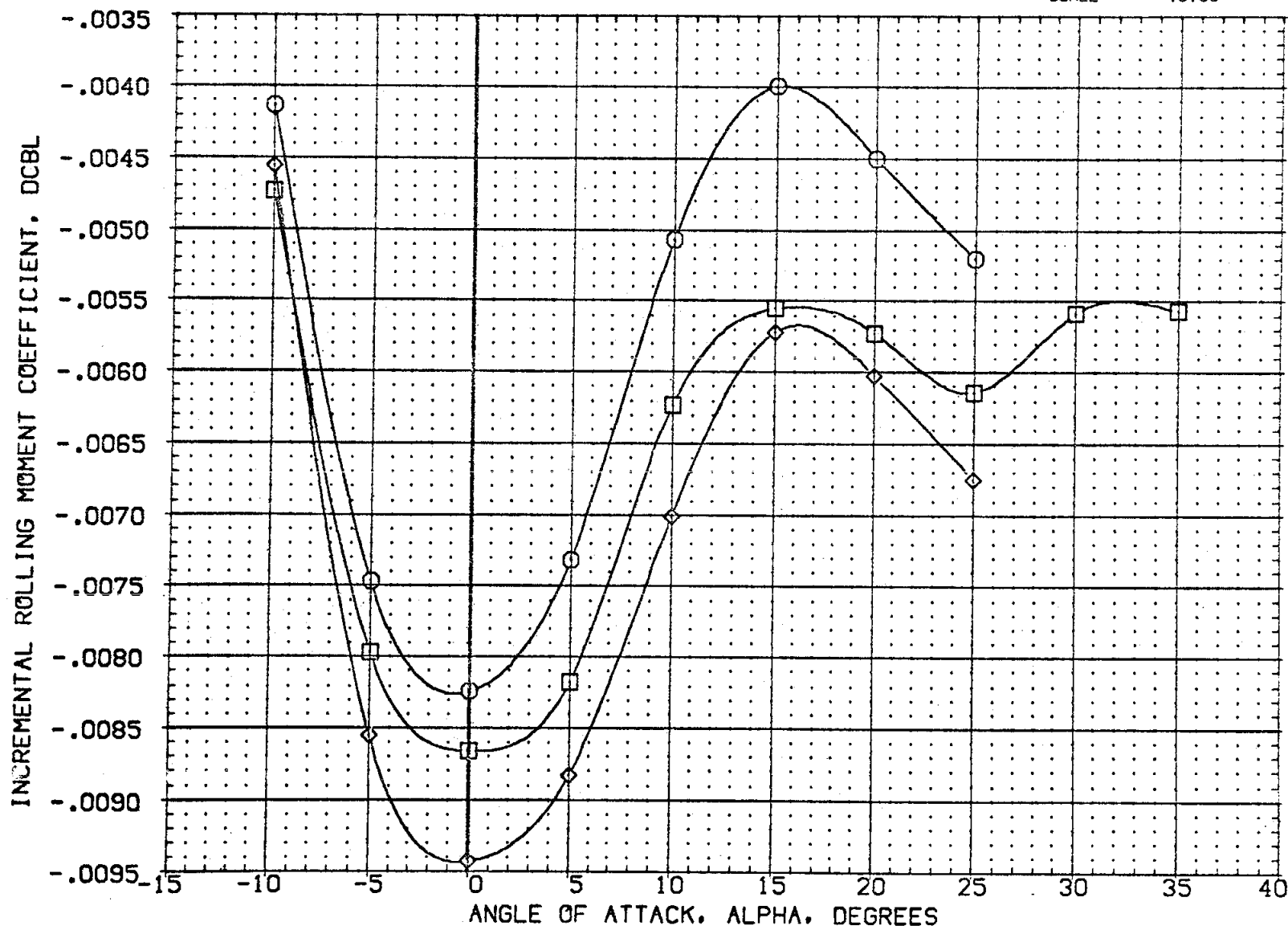


FIG 8 EFFECT OF AILRON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(CH2032)	OA105 CFHT109 MODEL 32-0 (0)N49N52	-15.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
(CQ1008)	OA-85 CFHT101 MODEL 32-0 (0)N49N52		158.000	20.000	.000	LREF	474.8100	IN.
(CH2031)	OA105 CFHT109 MODEL 32-0 (0)N49N52	15.000	158.000	20.000	.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

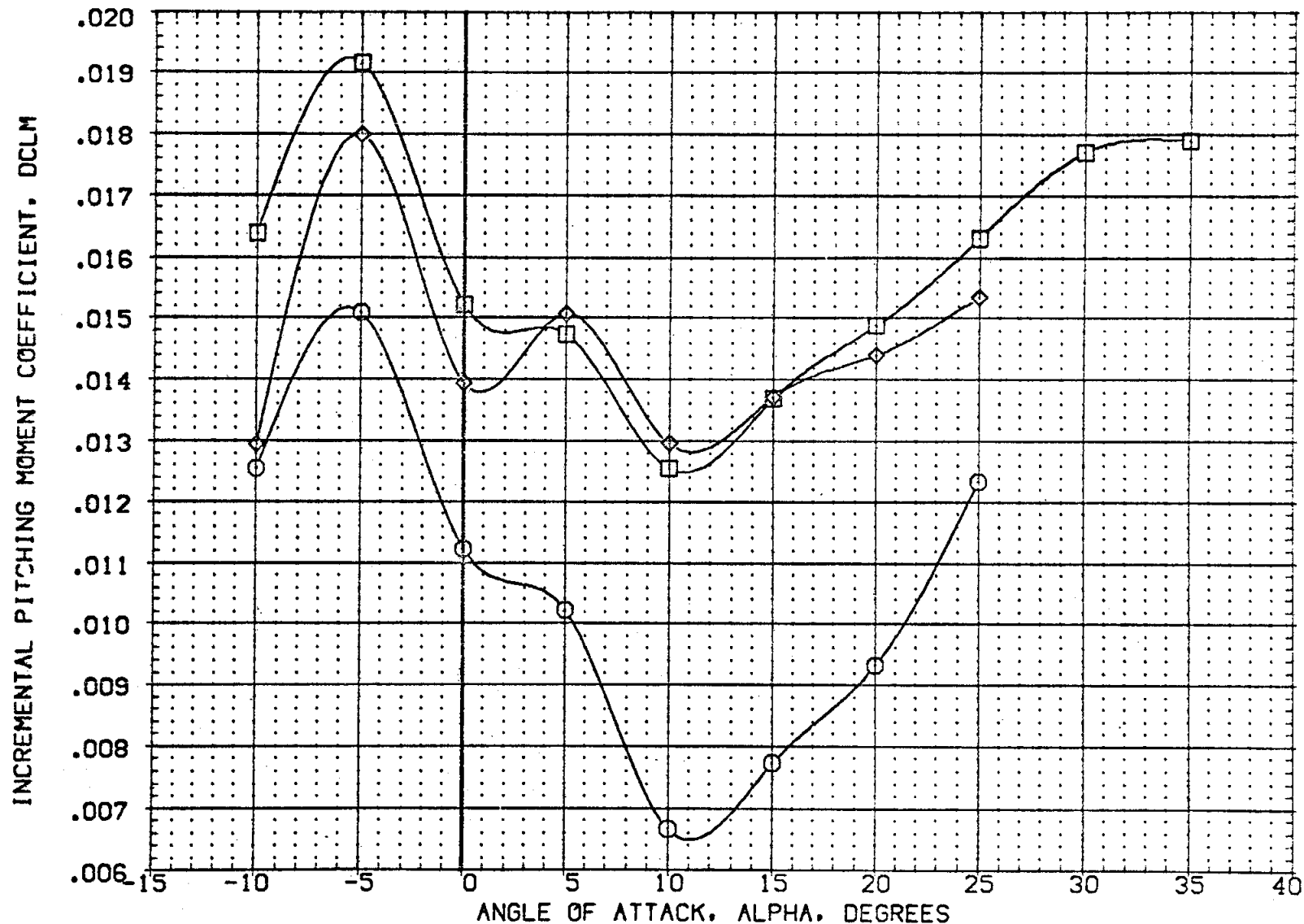


FIG 8 EFFECT OF AILRON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	PCRC5	Q-SIM	BDFLAP	REFERENCE INFORMATION		
(CH2032)	QA105 CPH109 MODEL 32-0 (0)N49N52 ROLL	-15.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
(C01008)	QA-85 CPH101 MODEL 32-0 01N49N52 ROLL		158.000	20.000	.000	LREF	474.8100	IN.
(CH2031)	QA105 CPH109 MODEL 32-0 (0)N49N52 ROLL	15.000	158.000	20.000	.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

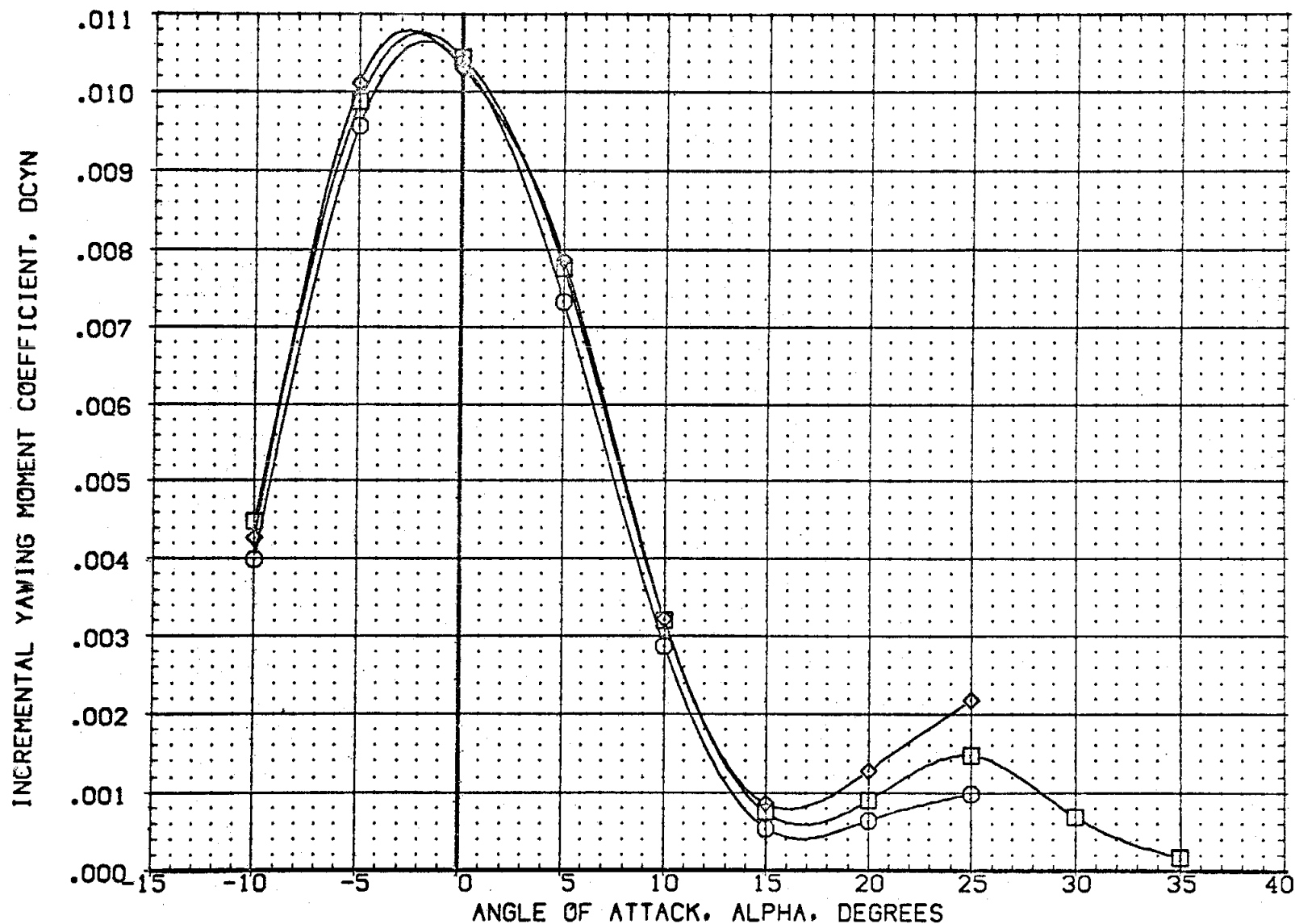


FIG 8 EFFECT OF AILERON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION
(Z4232N)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-15.000	158.000	20.000	.000	SREF 2690.0000 SQ.FT.
(Z0108N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	-15.000	158.000	20.000	.000	LREF 474.8100 IN.
(Z4231N)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	15.000	158.000	20.000	.000	BREF 936.6800 IN.
(Z4208F)	OA105 CFHT109 MODEL 32 0(0) NN49N52 RCS OFF	-15.000	.000	.000	.000	XMRP 1076.6700 IN. X0
(Z0103F)	OA-85 CFHT101 MODEL 32-0 01 NS2 RCS OFF	.000	.000	.000	.000	YMRP .0000 IN. Y0
(Z4207F)	OA105 CFHT109 MODEL 32 0(0) NN49N52 RCS OFF	15.000	.000	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

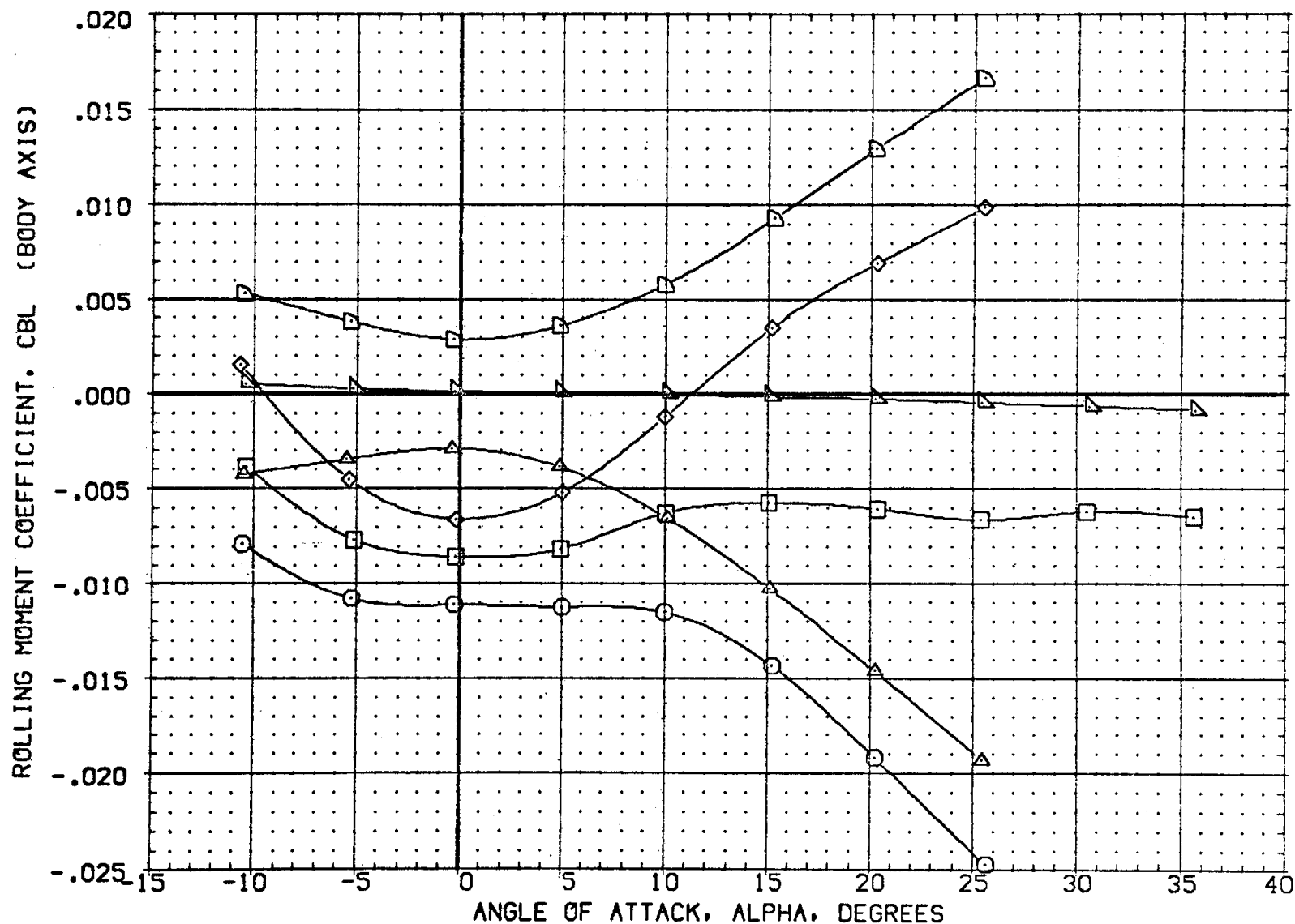


FIG. 8 EFFECT OF AILERON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	PC RCS	Q-SIM	BD FLAP	REFERENCE INFORMATION		
(ZH232N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-15.000	158.000	20.000	.000	SREF	2690.0000	SQ.FT.
(Z0108N)	0A-85 CFHT101 MODEL 32-0 01N49N52 ROLL		158.000	20.000	.000	LREF	474.8100	IN.
(ZH231N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	15.000	158.000	20.000	.000	BREF	936.6800	IN.
(ZH208F)	0A105 CFHT109 MODEL 32 0(0) NN49N52 RCS OFF	-15.000	.000	.000	.000	XMRP	1076.6700	IN. X0
(Z0103F)	0A-85 CFHT101 MODEL 32-0 01 N52 RCS OFF		.000	.000	.000	YMRP	.0000	IN. Y0
(ZH207F)	0A105 CFHT109 MODEL 32 0(0) NN49N52 RCS OFF	15.000	.000	.000	.000	ZMRP	375.0000	IN. Z0
						SCALE	.0100	

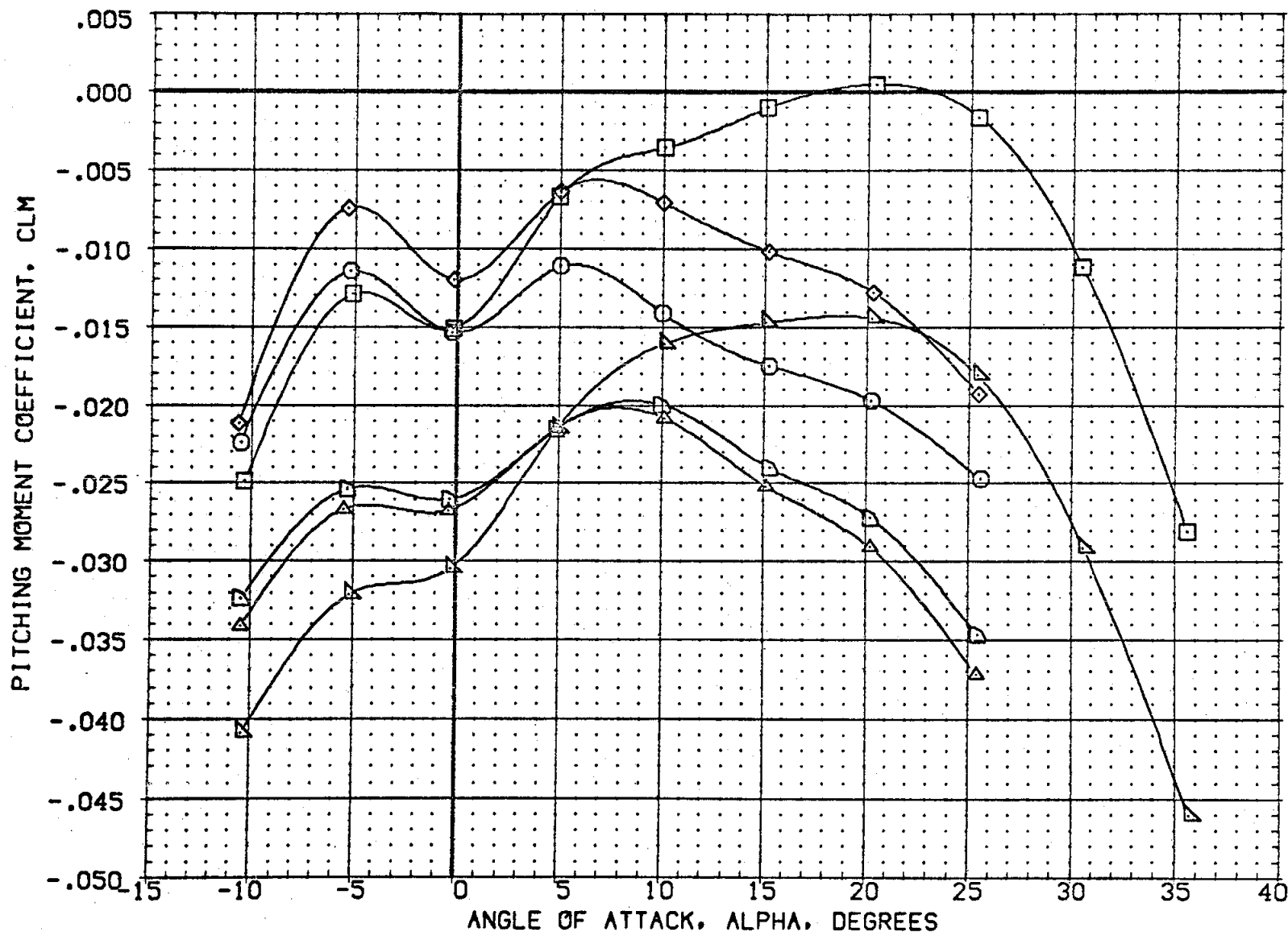


FIG 8 EFFECT OF AILRON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION
(ZH232N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-15.000	158.000	20.000	.000	SREF 2690.0000 SQ.FT.
(ZQ108N)	0A-85 CFHT101 MODEL 32-0 01N49N52 ROLL		158.000	20.000	.000	LREF 474.8100 IN.
(ZH231N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	15.000	158.000	20.000	.000	BREF 936.6800 IN.
(ZH208F)	0A105 CFHT109 MODEL 32 0(0) NN49N52 RCS OFF	-15.000	.000	.000	.000	XMRP 1076.6700 IN. X0
(ZQ103F)	0A-85 CFHT101 MODEL 32-0 01 N52 RCS OFF		.000	.000	.000	YMRP .0000 IN. Y0
(ZH207F)	0A105 CFHT109 MODEL 32 0(0) NN49N52 RCS OFF	15.000	.000	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

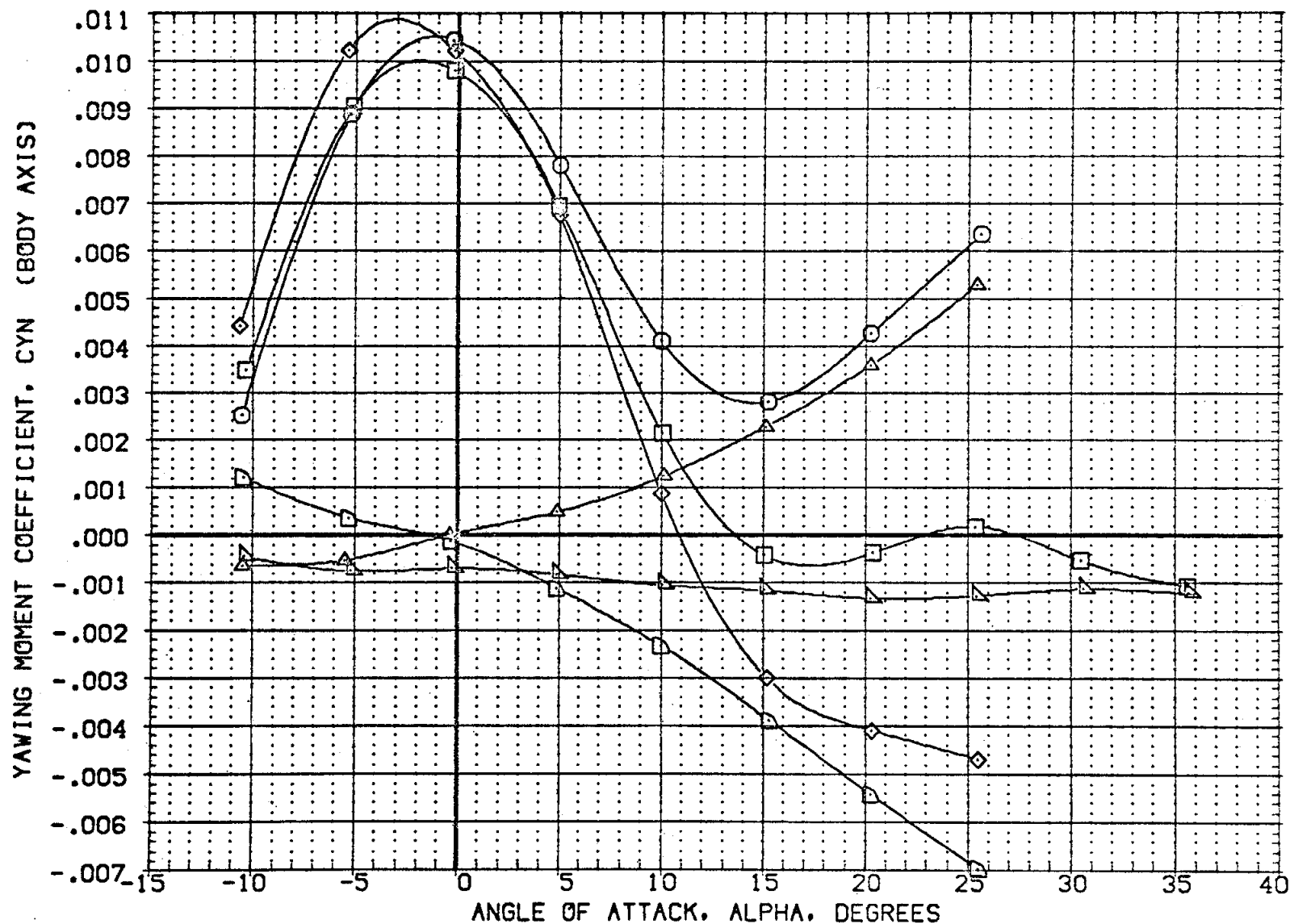


FIG 8 EFFECT OF AILERON DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2018)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	446.000	.000	7.000	SREF	2690.0000	SO.FT.
(CH2022)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	.000	7.000	LREF	474.8100	IN.
(CH2006)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	446.000	.000	7.000	BREF	936.6900	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

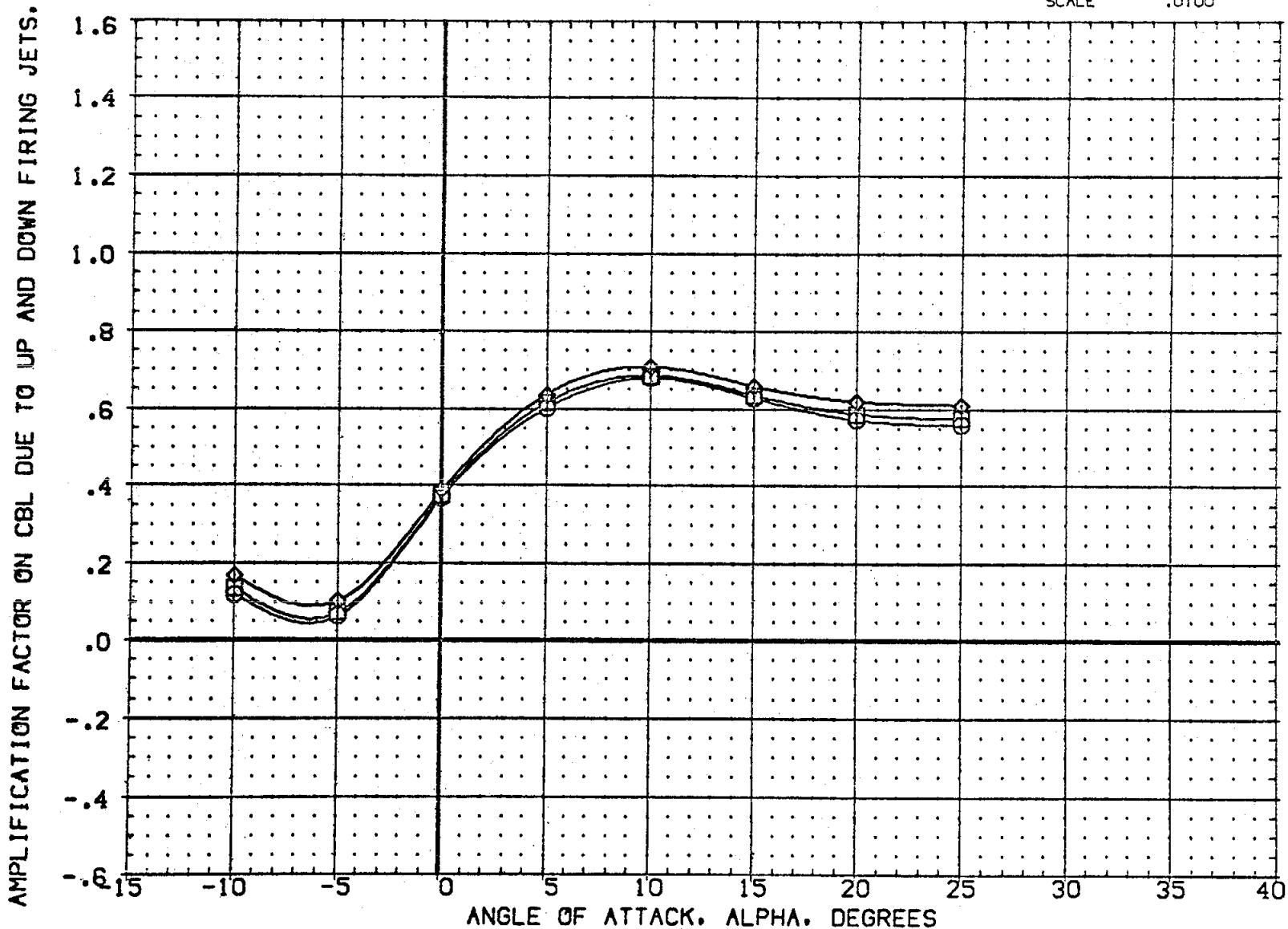


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2018)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	446.000	.000	7.000	SREF	2690.0000	50.FT.
(CH2022)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	.000	7.000	LREF	474.8100	IN.
(CH2006)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	446.000	.000	7.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. XO
						YMRP	.0000	IN. YO
						ZMRP	375.0000	IN. ZO
						SCALE	.0100	

CROSS COUPLING FACTOR ON CLM DUE TO UP AND DOWN FIRING JETS. KM.BL2

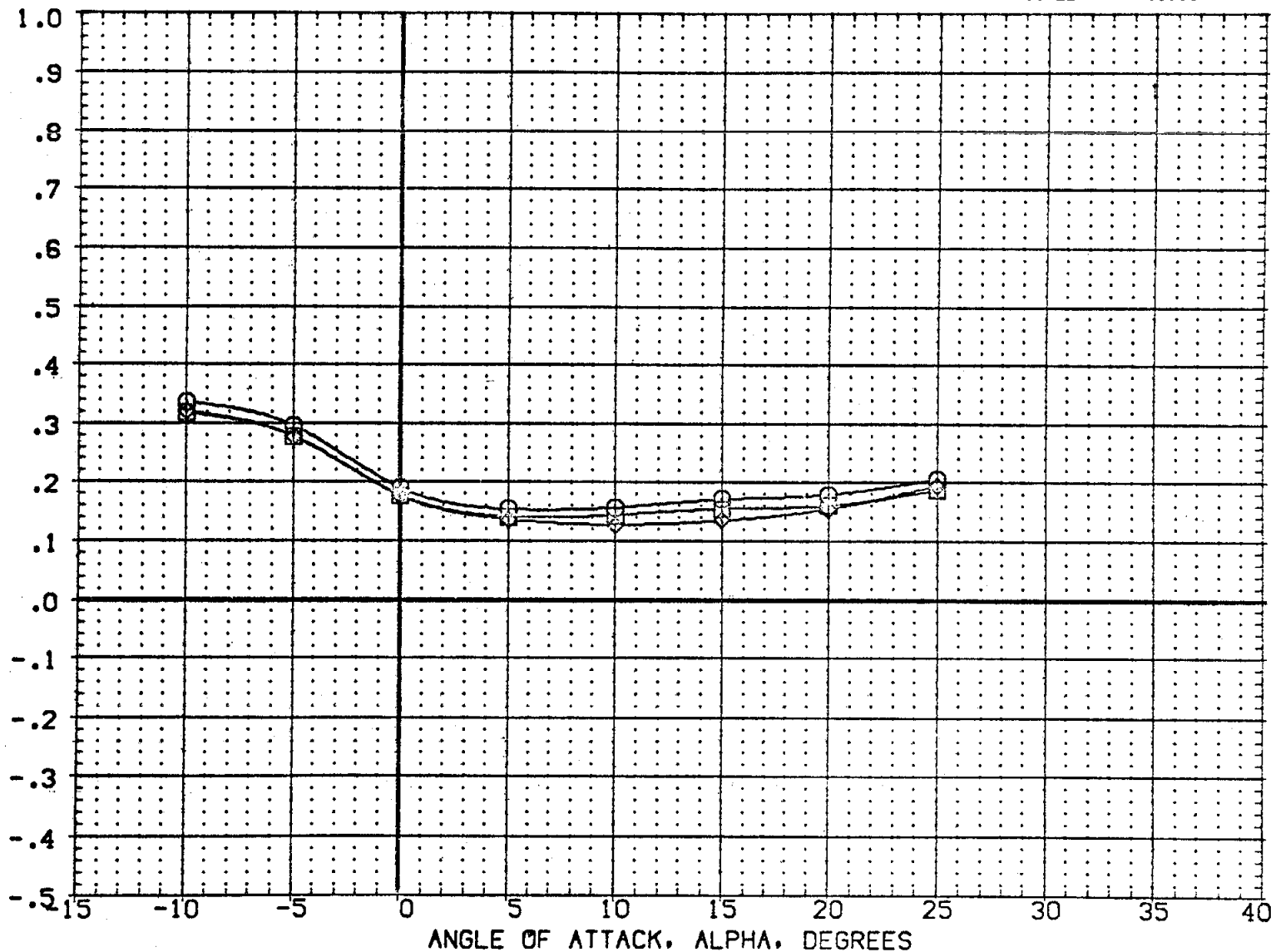


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2018)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	446.000	.000	7.000	SREF	2690.0000	50.FT.
(CH2022)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	.000	7.000	LREF	474.8100	IN.
(CH2006)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	446.000	.000	7.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

CROSS COUPLING FACTOR ON CYN DUE TO UP AND DOWN FIRING JETS. KYN.L2

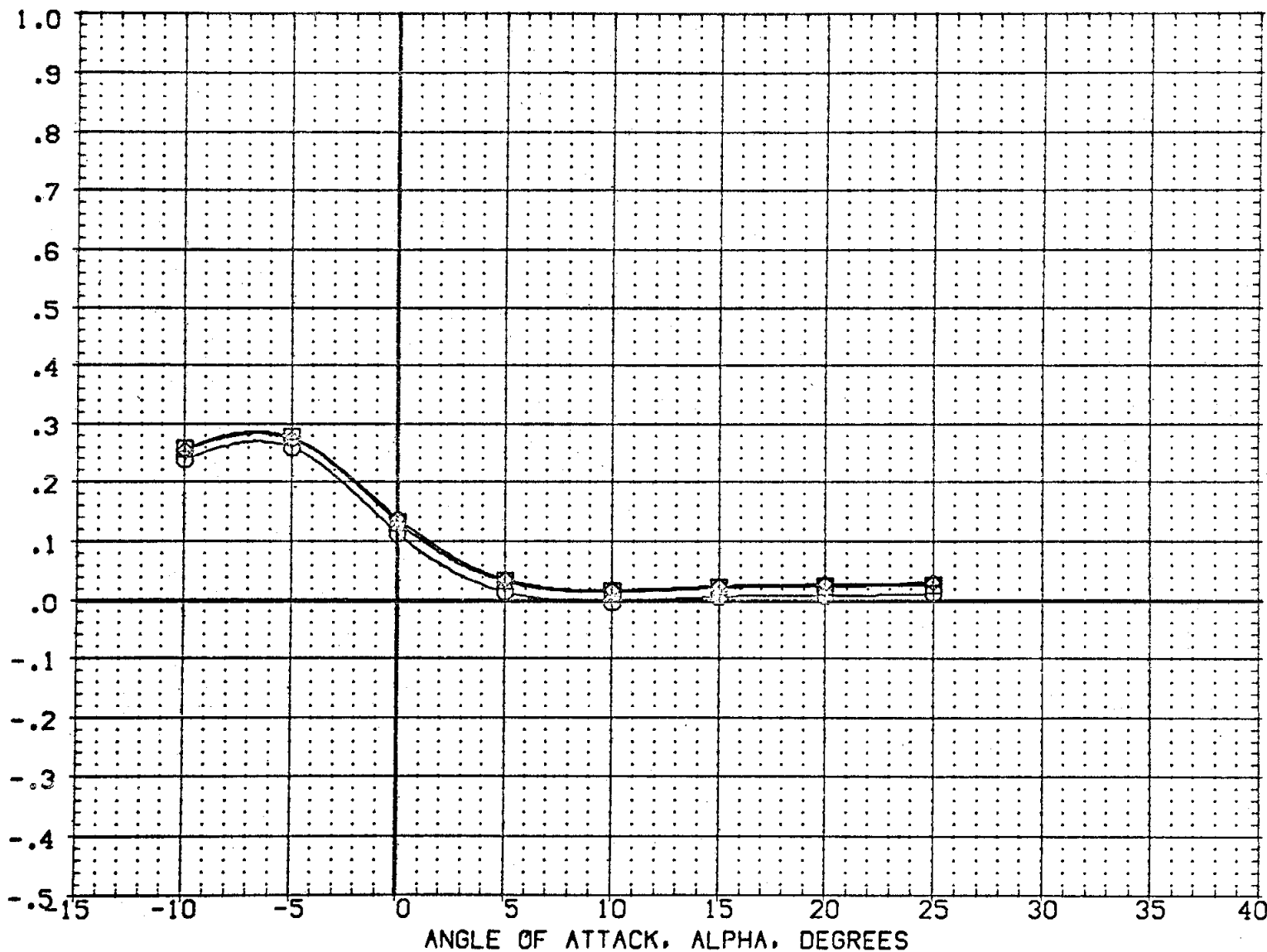


FIG 9 EFFECT OF BDFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2018)	DA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	446.000	.000	7.000	SREF	2690.0000	SQ.FT.
(CH2022)	DA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	.000	7.000	LREF	474.8100	IN.
(CH2006)	DA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	446.000	.000	7.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

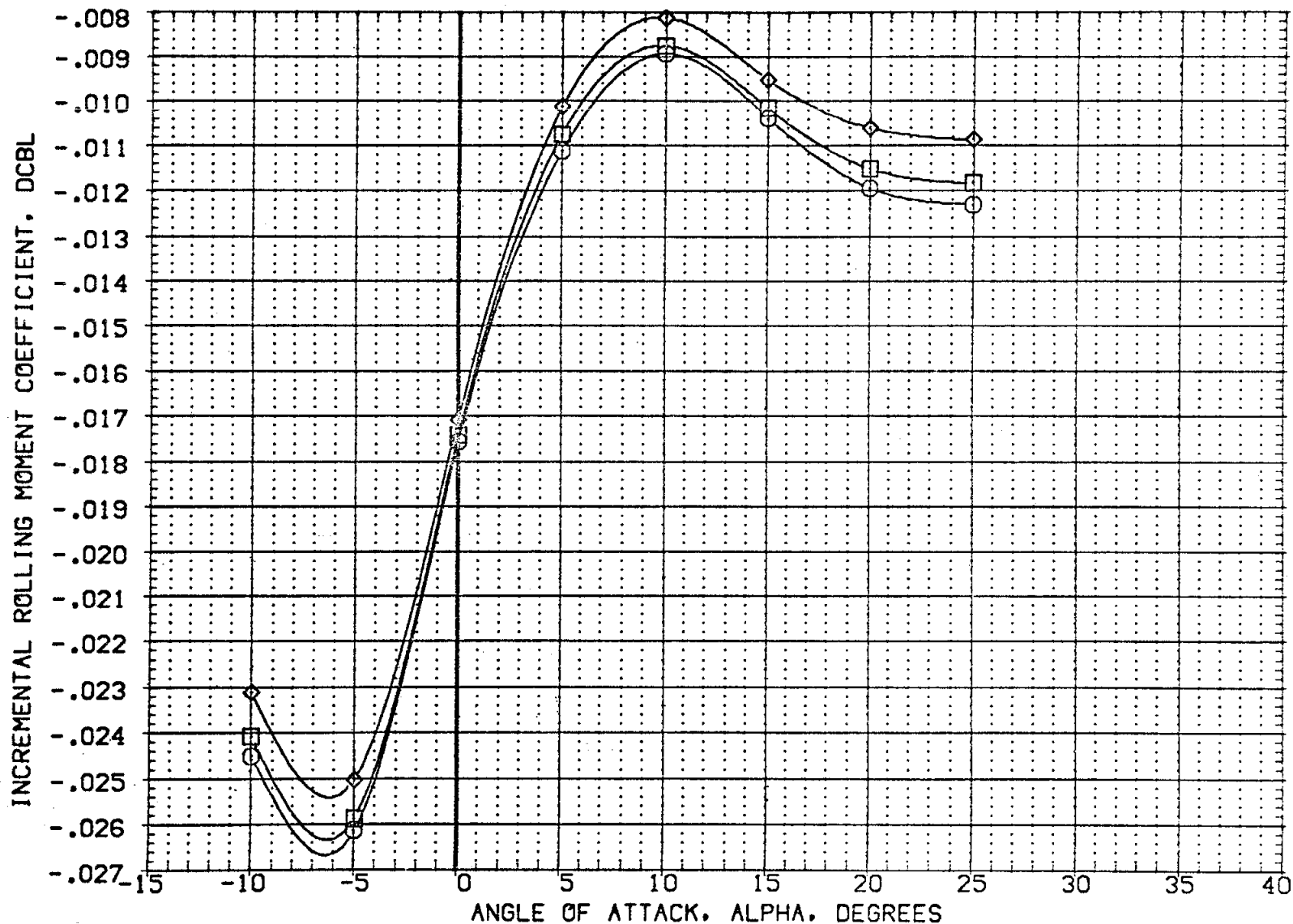


FIG 9 EFFECT OF BDFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2018)	0A105 CPRT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	446.000	.000	7.000	SREF	2690.0000 SQ.FT.
(CH2022)	0A105 CPRT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	.000	7.000	LREF	474.8100 IN.
(CH2006)	0A105 CPRT109 MODEL 32-0 (0)N49N52 ROLL	13.750	446.000	.000	7.000	BREF	936.6800 IN.
						XMRP	1076.6700 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

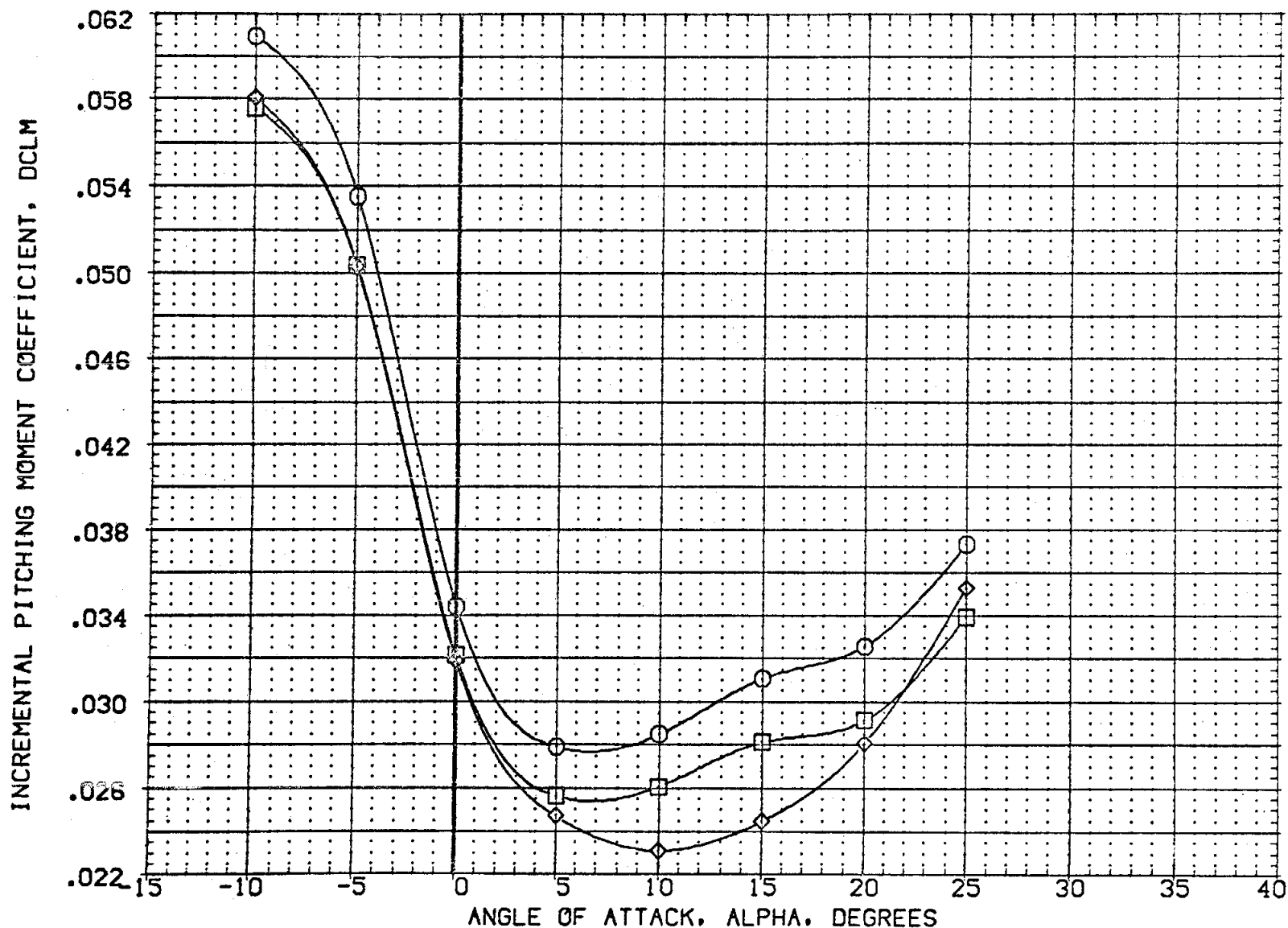


FIG 9 EFFECT OF BDFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRCS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2018)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	446.000	.000	7.000	SREF	2690.0000	50. FT.
(CH2022)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	.000	7.000	LREF	474.8100	IN.
(CH2006)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	446.000	.000	7.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

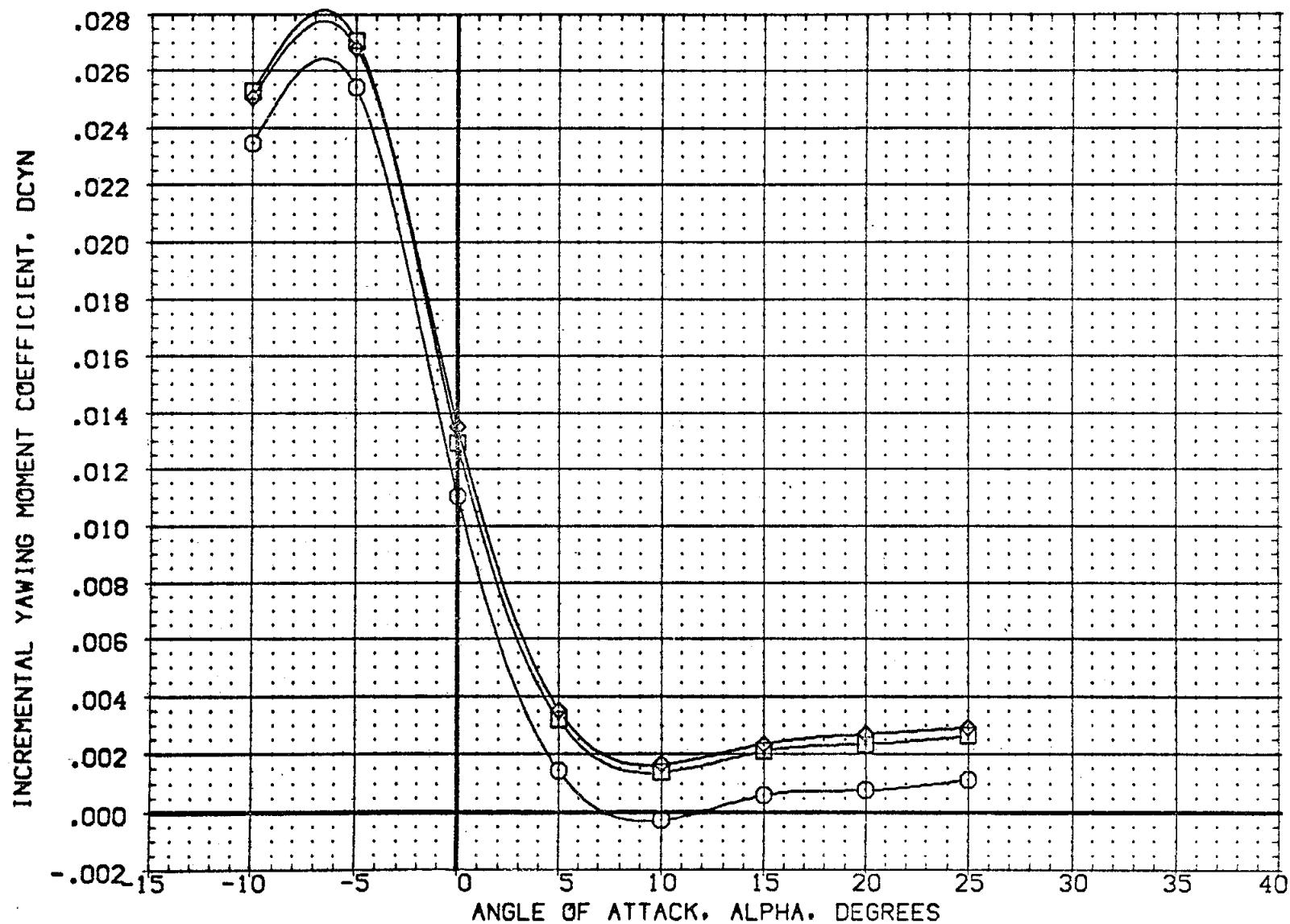


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH218N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(ZH222N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	.000	7.000	LREF 474.8100 IN.
(ZH206N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	446.000	.000	7.000	BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) N49N52 RCS OFF	-14.250	.000	.000	.000	XMRP 1076.6700 IN. X0
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N49N52 RCS OFF	.000	.000	.000	.000	YMRP .0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) N49N52 RCS OFF	13.750	.000	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

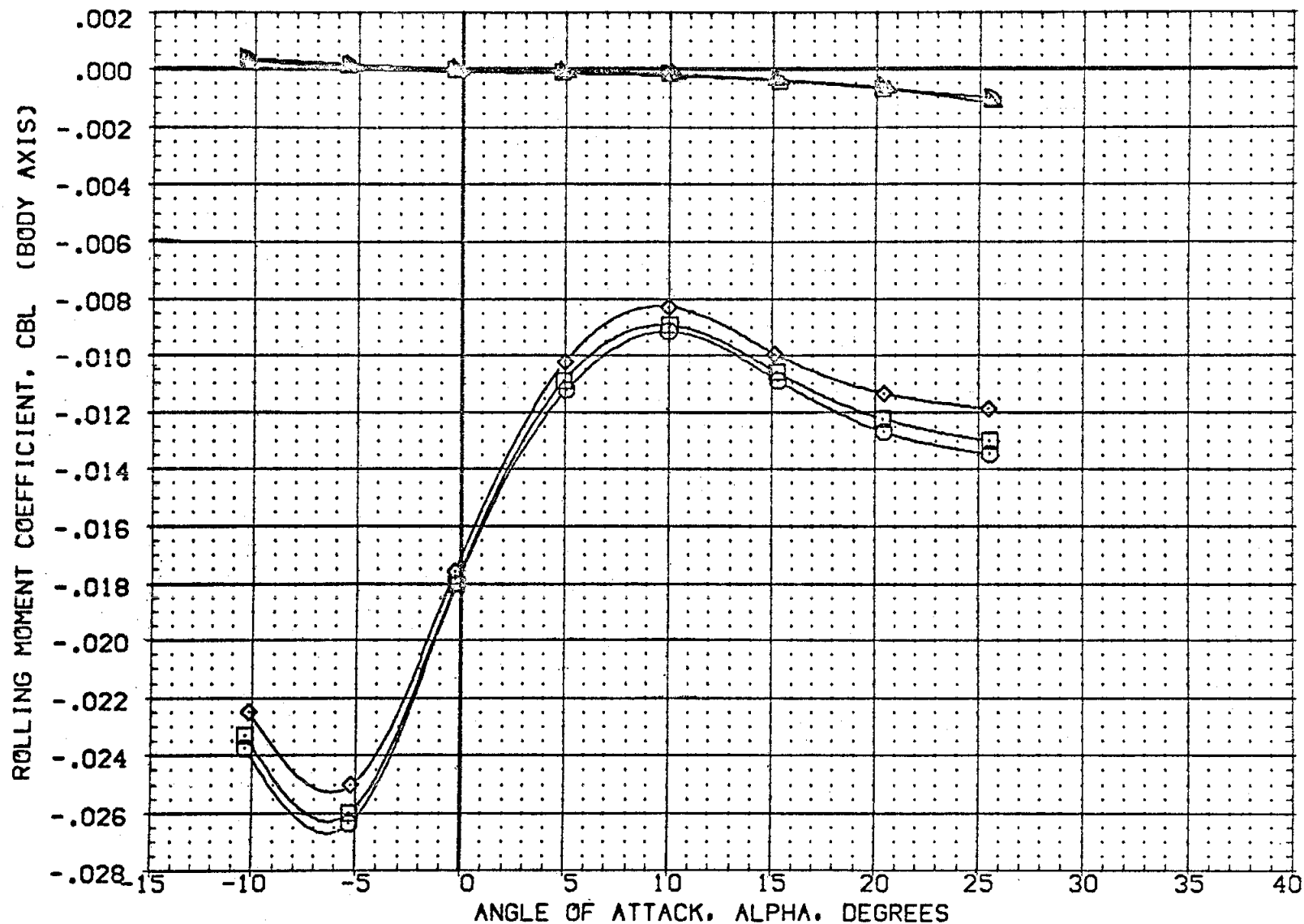


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(ZH218N)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	-14.250	446.000	.000	7.000	SREF	2690.0000 SQ.FT.
(ZH222N)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	.000	446.000	.000	7.000	LREF	474.8100 IN.
(ZH206N)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	13.750	446.000	.000	7.000	BREF	936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) NN52	RCS OFF	-14.250	.000	.000	.000	XMRF	1076.6700 IN. X0
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NN51	RCS OFF	.000	.000	.000	.000	YMRF	.0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) NN51	RCS OFF	13.750	.000	.000	.000	ZMRF	375.0000 IN. Z0
							SCALE	.0100

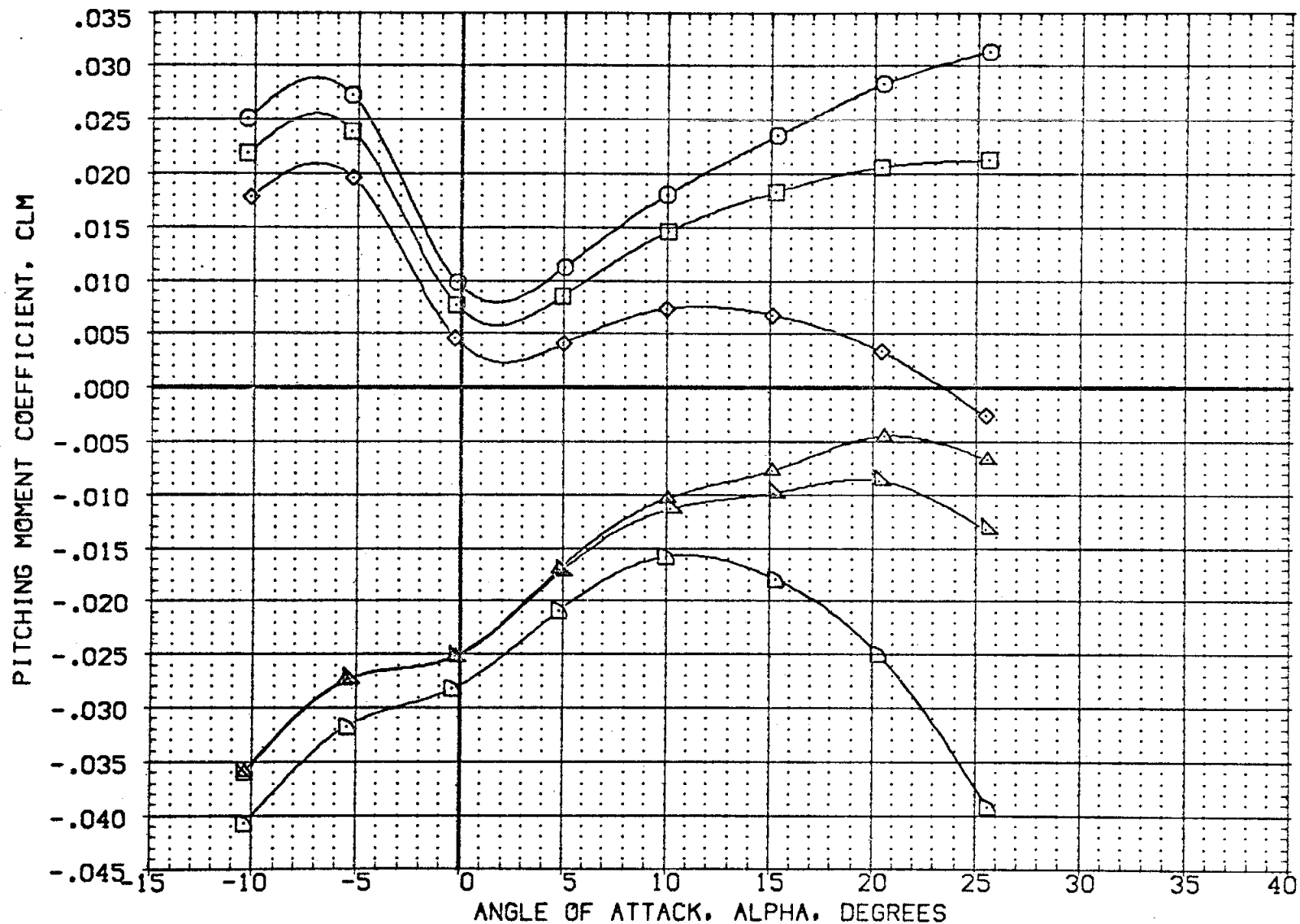


FIG 9 EFFECT OF BDFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH218N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(ZH222N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	.000	446.000	.000	7.000	LREF 474.8100 IN.
(ZH206N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	446.000	.000	7.000	BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) NN52 RCS OFF	-14.250	.000	.000	.000	XMRF 1076.6700 IN. XO
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NN51 RCS OFF	.000	.000	.000	.000	YMRF .0000 IN. YO
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) NS1 RCS OFF	13.750	.000	.000	.000	ZMRF 375.0000 IN. ZO
						SCALE .0100

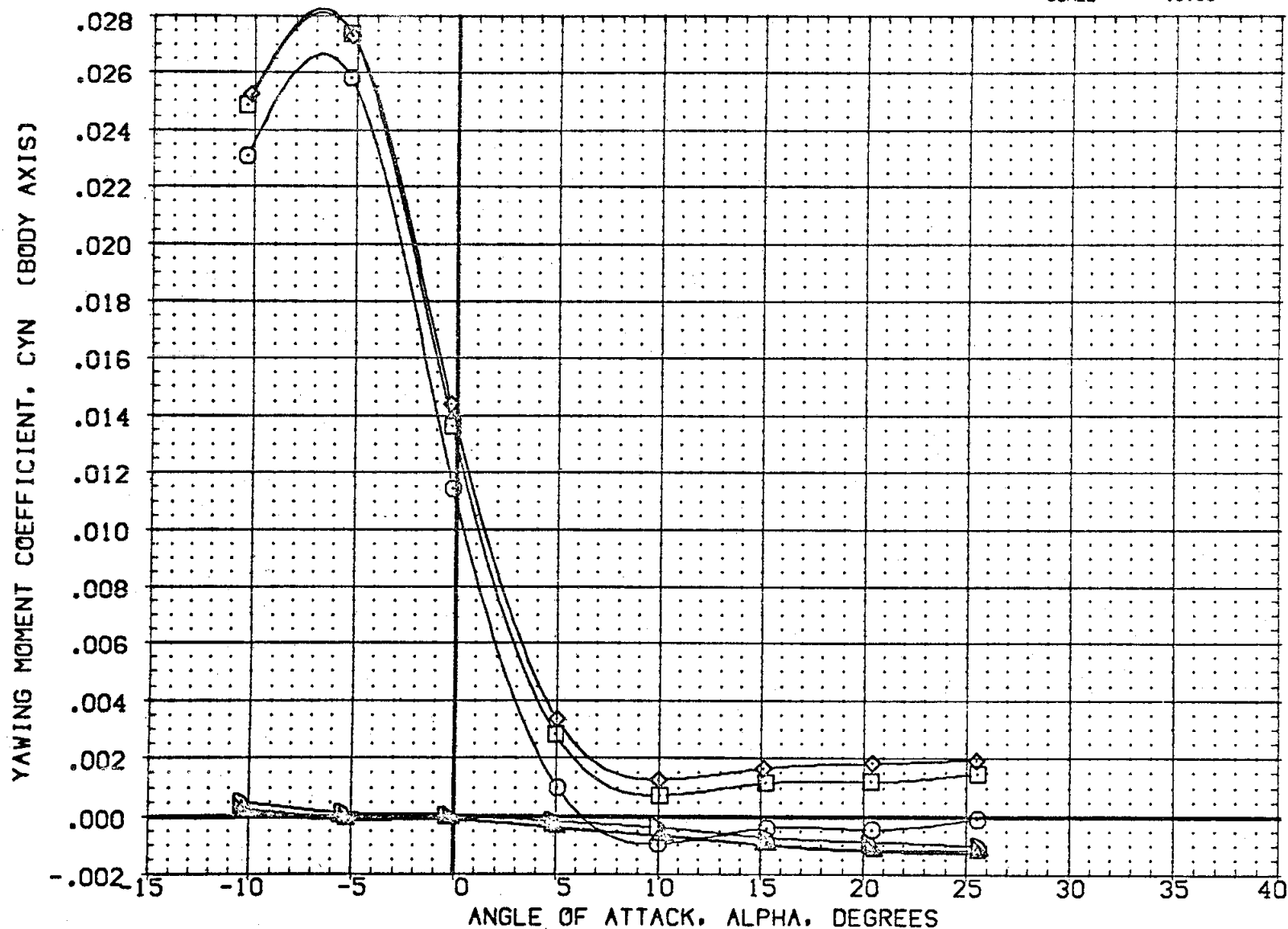


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2017)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(C01008)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH2005)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	158.000	.000	20.000	BREF	936.6800 IN.
						XMRP	1076.6700 IN. XO
						YMRP	.0000 IN. YO
						ZMRP	375.0000 IN. ZO
						SCALE	.0100

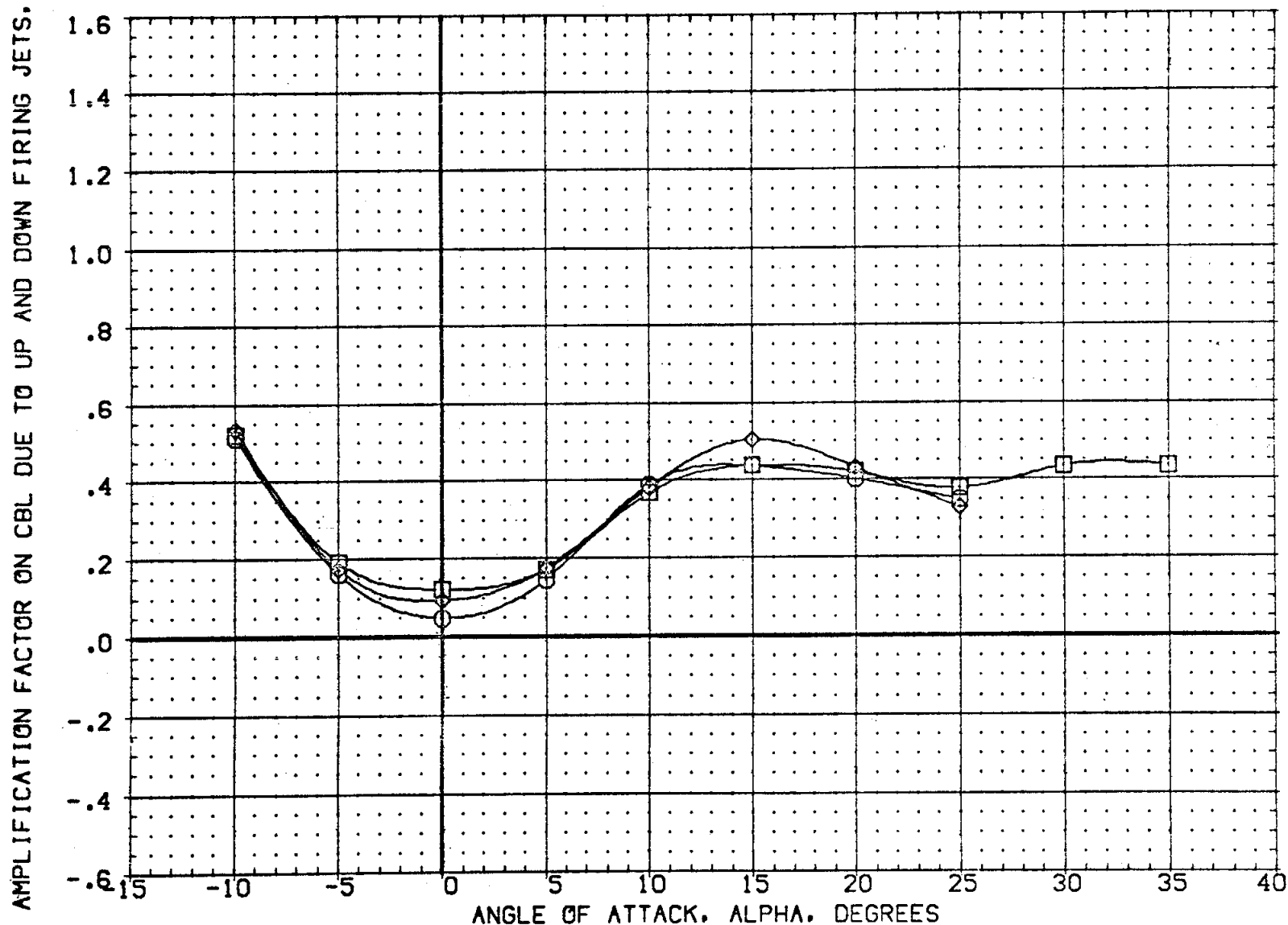


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION
(CH2017)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(CQ1008)	0A-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	.000	20.000	LREF 474.8100 IN.
(CH2005)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	158.000	.000	20.000	BREF 936.6800 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

CROSS COUPLING FACTOR ON CLM DUE TO UP AND DOWN FIRING JETS. KM.BL2

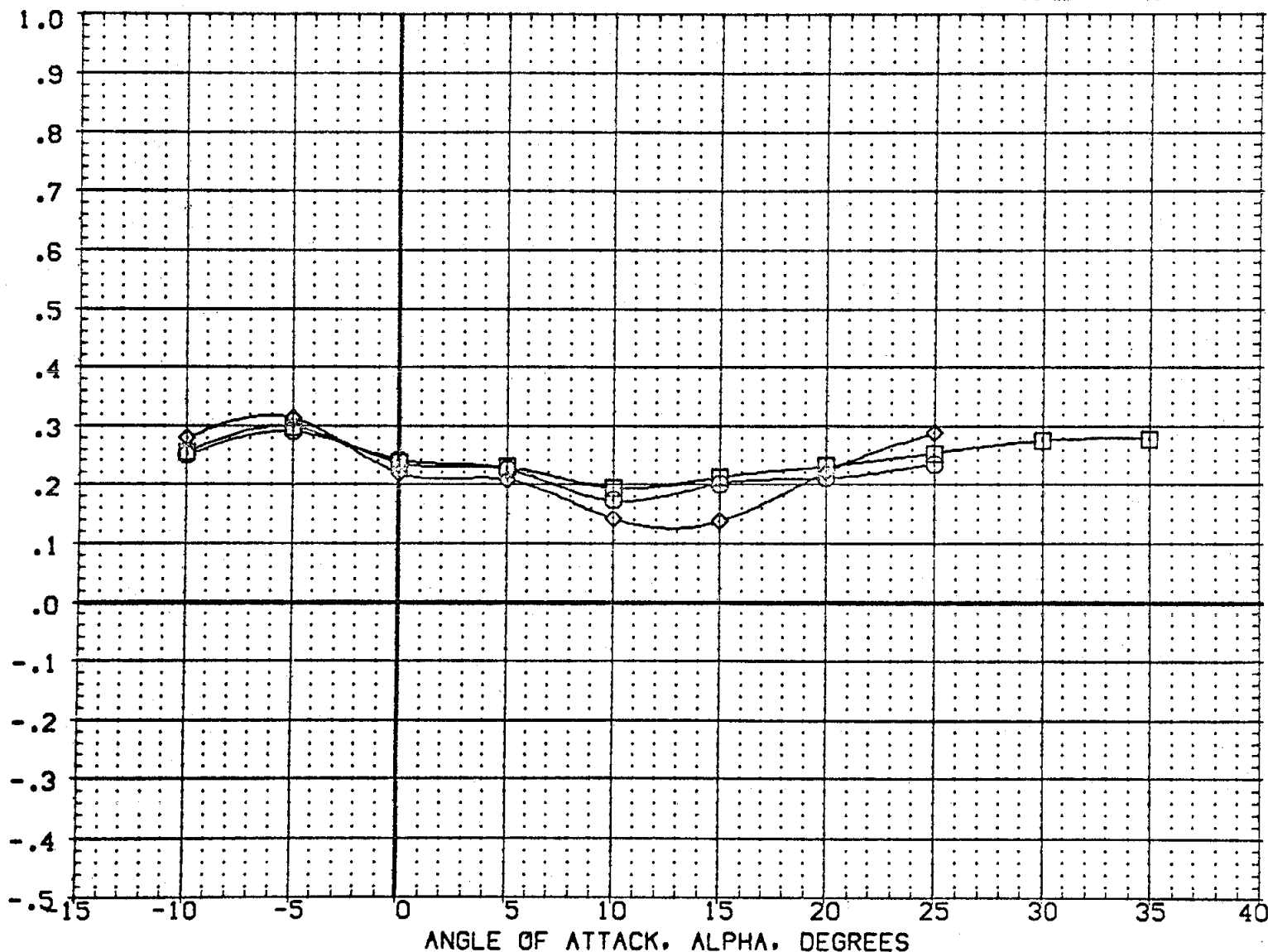


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2017)	QA105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(CD1008)	QA-85 CFHT101 MODEL 32-0 01N49N52	ROLL	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH2005)	QA105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	13.750	158.000	.000	20.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

CROSS COUPLING FACTOR ON CYN DUE TO UP AND DOWN FIRING JETS. KYN.L2

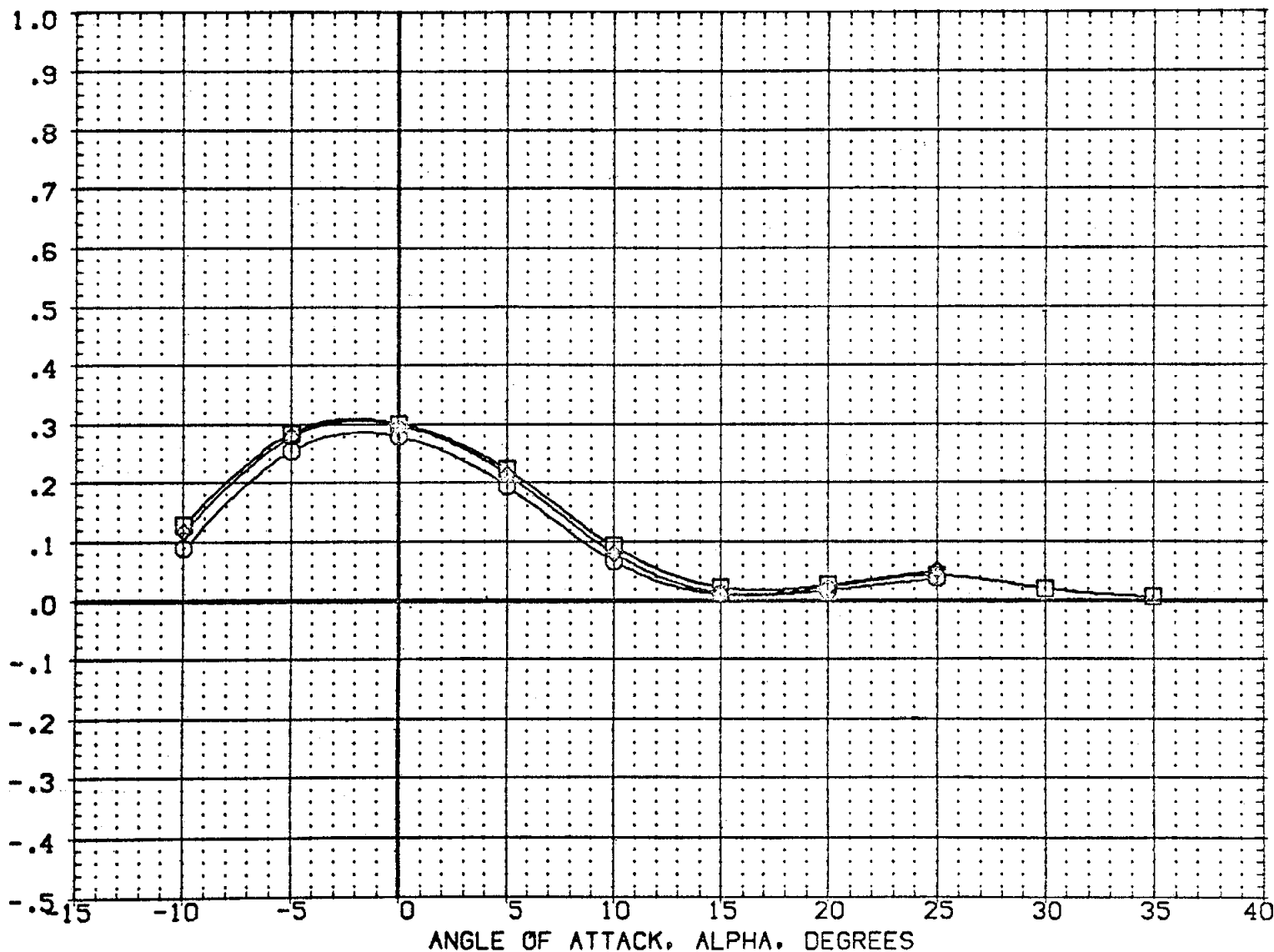


FIG 9 EFFECT OF BDflap DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRCSS	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2017)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(EQ1008)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH2005)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	158.000	.000	20.000	BREF	936.6800 IN.
						XMRP	1076.6700 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

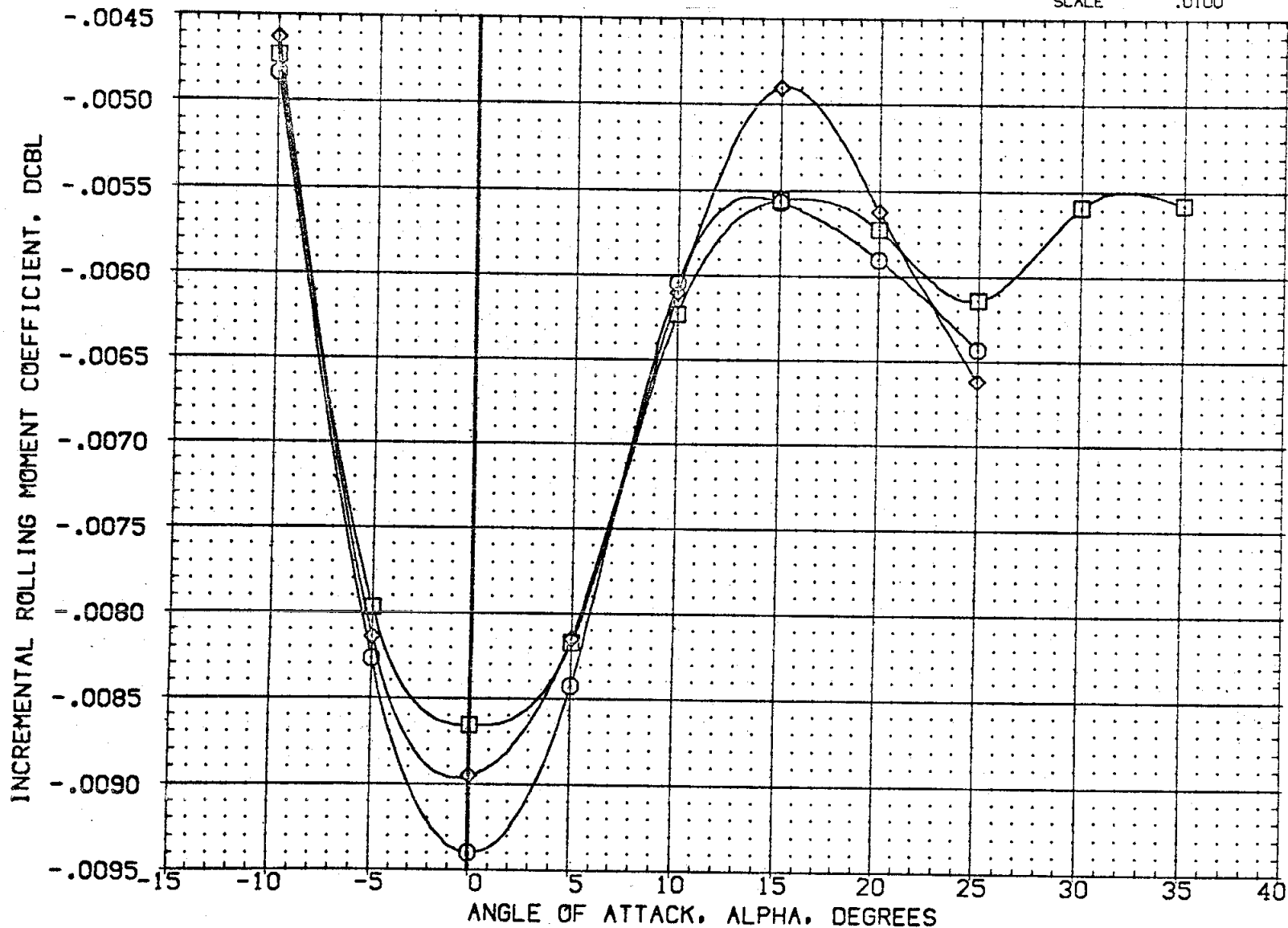


FIG 9 EFFECT OF BDFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2017)	OA105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(CO1008)	OA-85 CFHT101 MODEL 32-0 01N49N52	ROLL	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH2005)	OA105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	13.750	158.000	.000	20.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. XO
							YMRP	.0000 IN. YO
							ZMRP	375.0000 IN. ZO
							SCALE	.0100

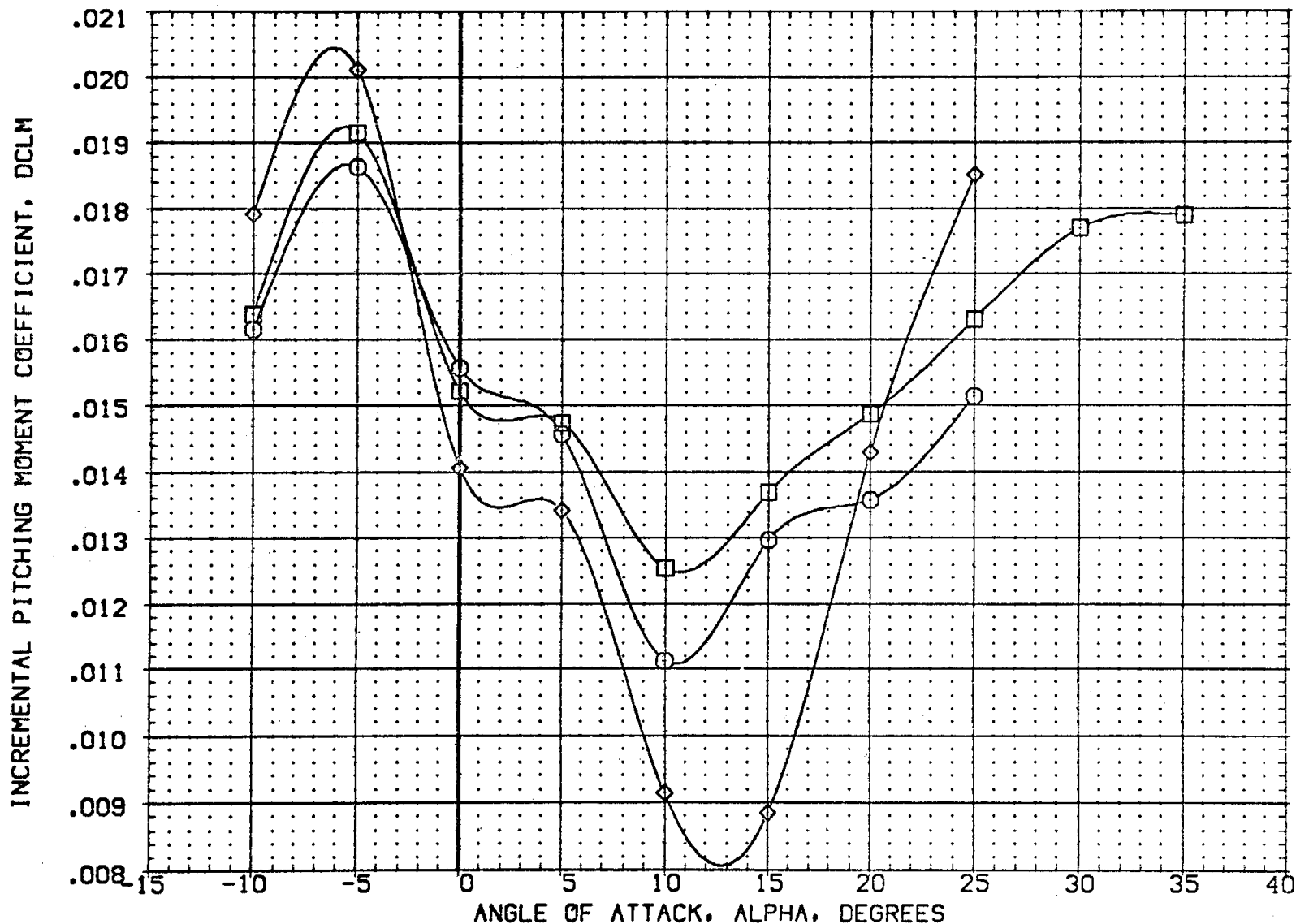


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2017)	0A105 CFHT109 MODEL 32-0 (0)N49N52	-14.250	158.000	.000	20.000	SREF	2690.0000	SQ.FT.
(C01008)	0A-85 CFHT101 MODEL 32-0 01N49N52	.000	158.000	.000	20.000	LREF	474.8100	IN.
(CH2005)	0A105 CFHT109 MODEL 32-0 (0)N49N52	13.750	158.000	.000	20.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

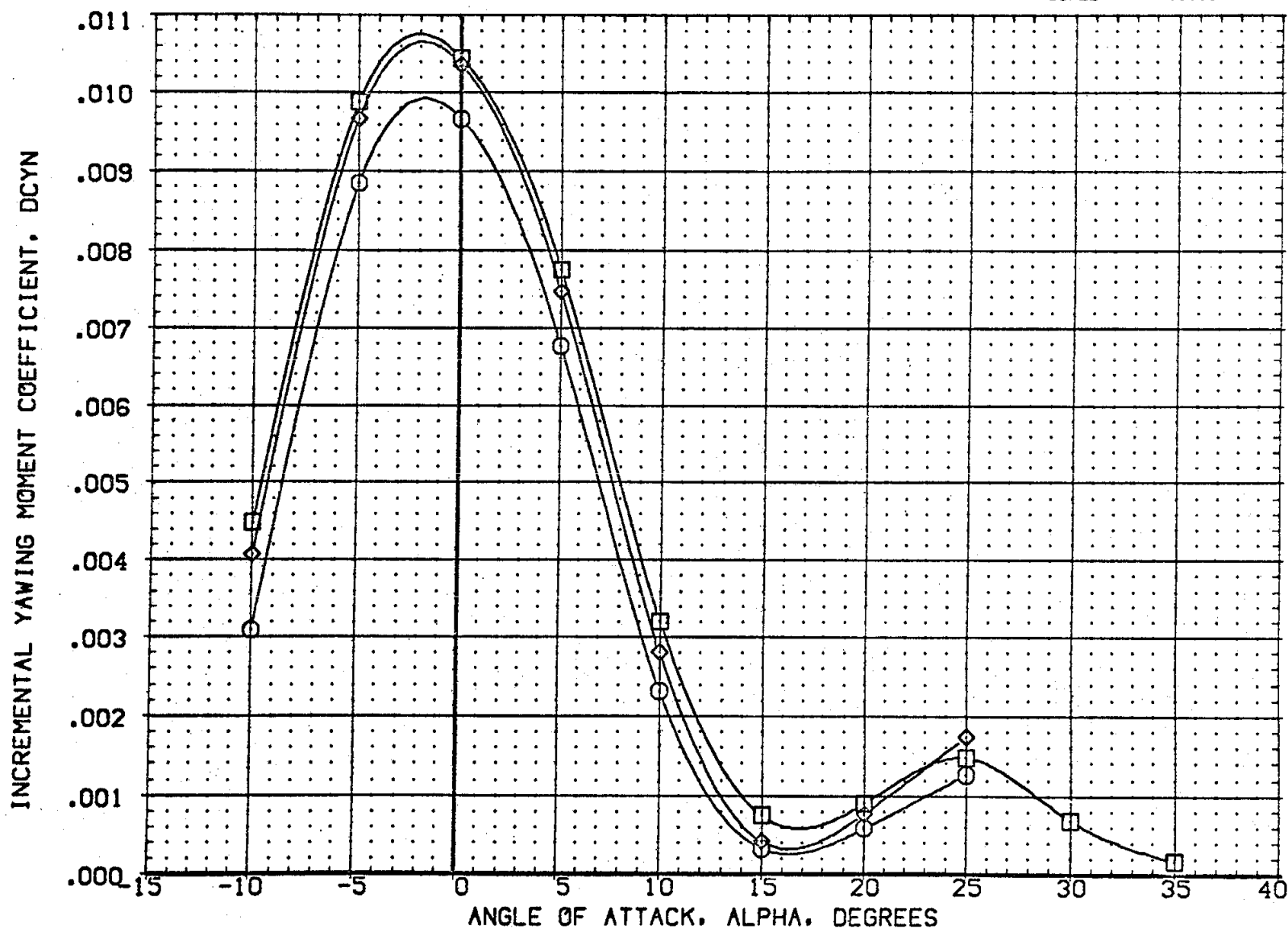


FIG 9 EFFECT OF BDFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
(ZH217N)	QA105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	-14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(ZQ108N)	QA-85 CFHT101 MODEL 32-0 01N49N52	ROLL	.000	158.000	.000	20.000	LREF 474.8100 IN.
(ZH205N)	QA105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	13.750	158.000	.000	20.000	BREF 936.6900 IN.
(ZH202F)	QA105 CFHT109 MODEL 32 0(0) N52	RCS OFF	-14.250	.000	.000	.000	XMRP 1076.6700 IN. X0
(ZQ103F)	QA-85 CFHT101 MODEL 32-0 01 N52	RCS OFF	.000	.000	.000	.000	YMRP .0000 IN. Y0
(ZH201F)	QA105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000	ZMRP 375.0000 IN. Z0
							SCALE .0100

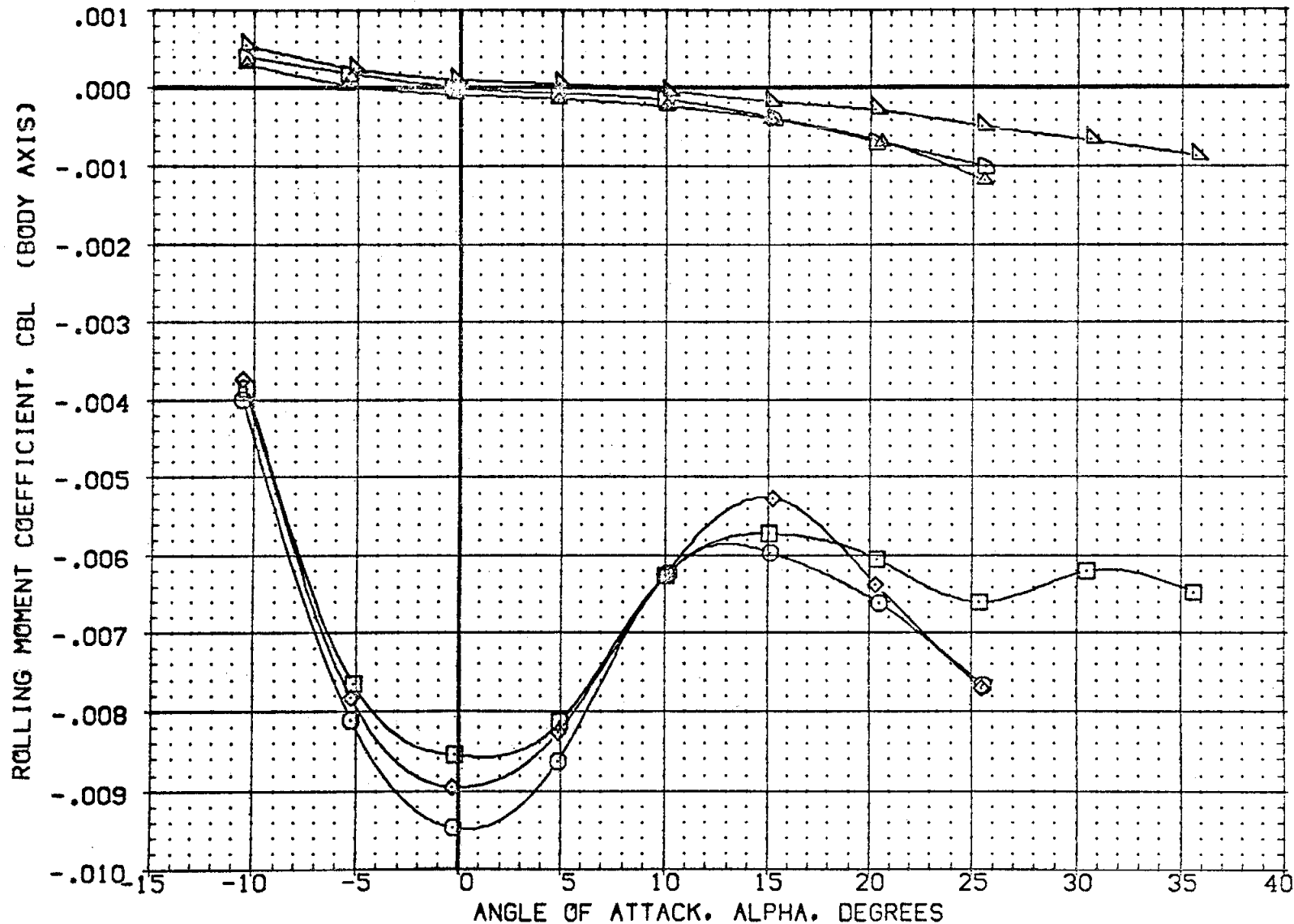


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH217N)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(ZQ108N)	OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL	.000	158.000	.000	20.000	LREF 474.8100 IN.
(ZH205N)	OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	13.750	158.000	.000	20.000	BREF 936.6800 IN.
(ZH202F)	OA105 CFHT109 MODEL 32 0(0) NS52 RCS OFF	-14.250	.000	.000	.000	XM RP 1076.6700 IN. X0
(ZQ103F)	OA-85 CFHT101 MODEL 32-0 01 NS2 RCS OFF	.000	.000	.000	.000	YM RP .0000 IN. Y0
(ZH201F)	OA105 CFHT109 MODEL 32 0(0) NS1 RCS OFF	13.750	.000	.000	.000	ZM RP 375.0000 IN. Z0
						SCALE .0100

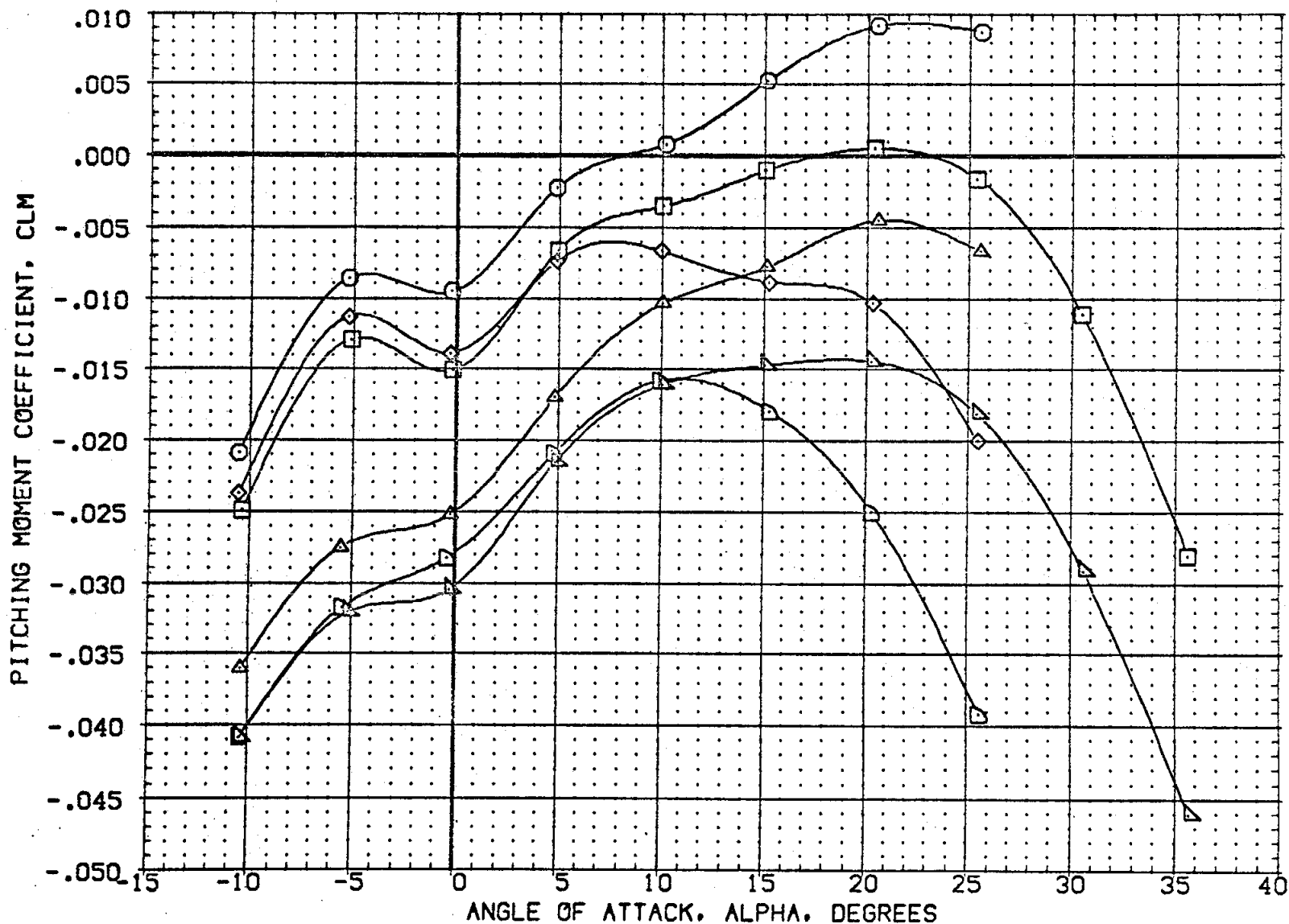


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH217N)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	-14.250	158.000	.000	20.000 SREF 2690.0000 SQ.FT.
(Z0108N)	0A-85 CFHT101 MODEL 32-0 01N49N52	ROLL	.000	158.000	.000	20.000 LREF 474.8100 IN.
(ZH205N)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	13.750	158.000	.000	20.000 BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32-0 (0) N52	RCS OFF	-14.250	.000	.000	.000 XMRP 1076.6700 IN. X0
(Z0103F)	0A-85 CFHT101 MODEL 32-0 01 N52	RCS OFF	.000	.000	.000	.000 YMRP .0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32-0 (0) N51	RCS OFF	13.750	.000	.000	.000 ZMRP 375.0000 IN. Z0
						SCALE .0100

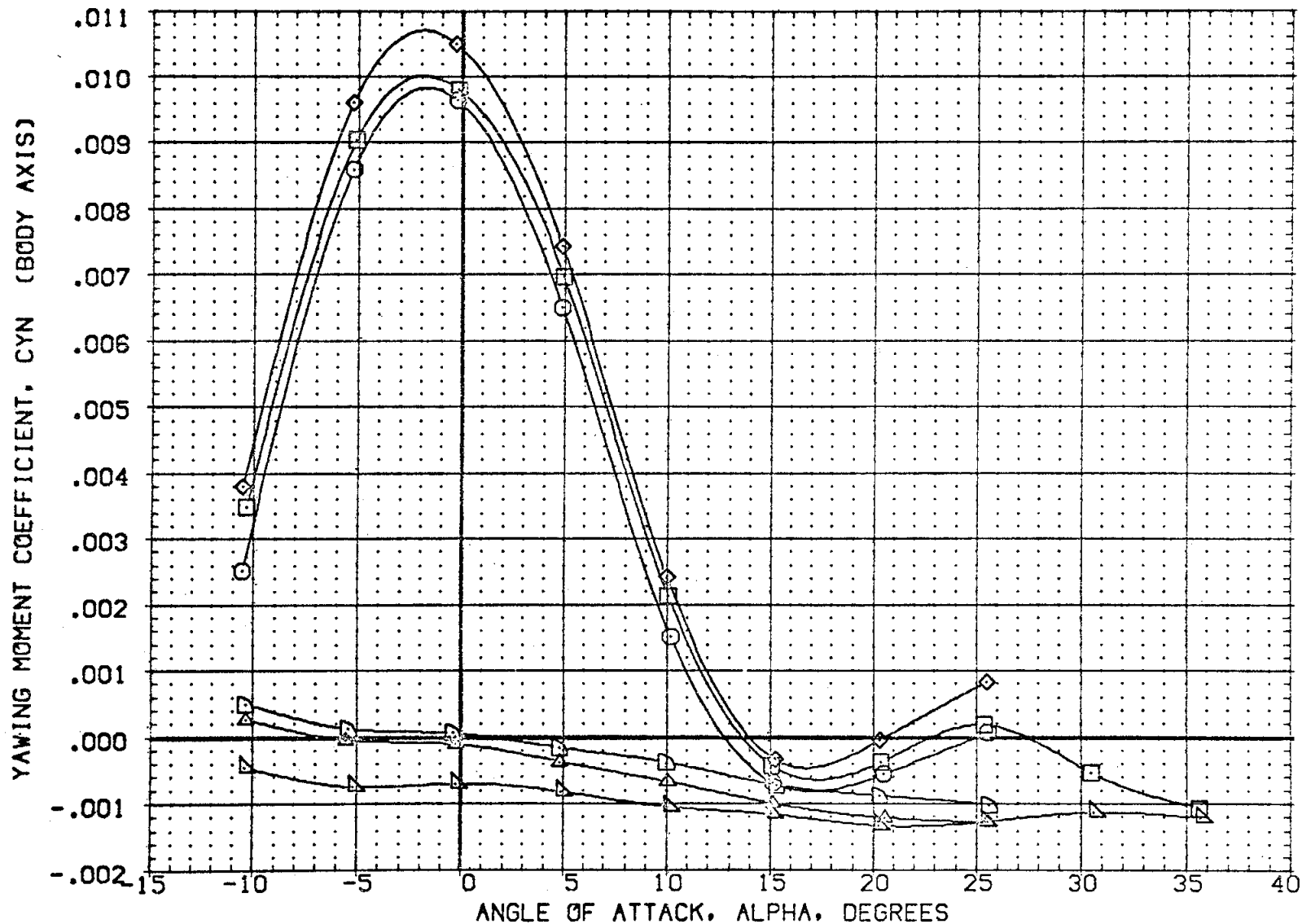


FIG 9 EFFECT OF BDFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

AMPLIFICATION FACTOR ON CBL DUE TO UP AND DOWN FIRING JETS. KBLU/D

AMPLIFICATION FACTOR ON CBL DUE TO UP AND DOWN FIRING JETS. KBLU/D



AMPLIFICATION FACTOR ON CBL DUE TO UP AND DOWN FIRING JETS. KBLU/D



CROSS COUPLING FACTOR ON CLM DUE TO UP AND DOWN FIRING JETS. KM.BL2

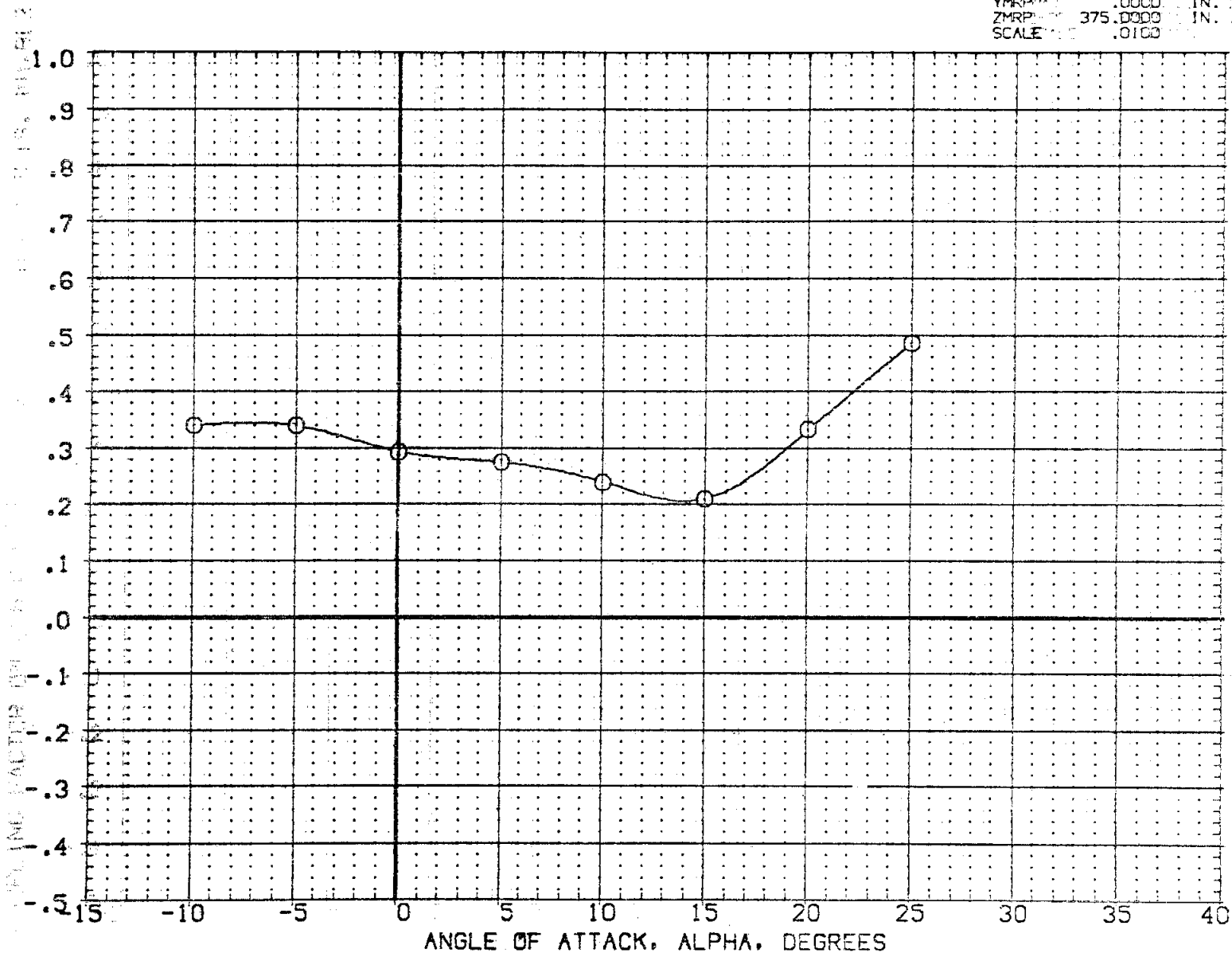


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2004) ○ 0A105 CFRT105 MODEL 32-0 (0)N49N52 ROLL

BDFLAP PCRC5 ELEVON Q-SIM  
13.750 62.000 .000 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. XO  
YMRP .0000 IN. YO  
ZMRP 375.0000 IN. ZO  
SCALE .0100

CROSS COUPLING FACTOR ON CYN DUE TO UP AND DOWN FIRING JETS, KYN.L2

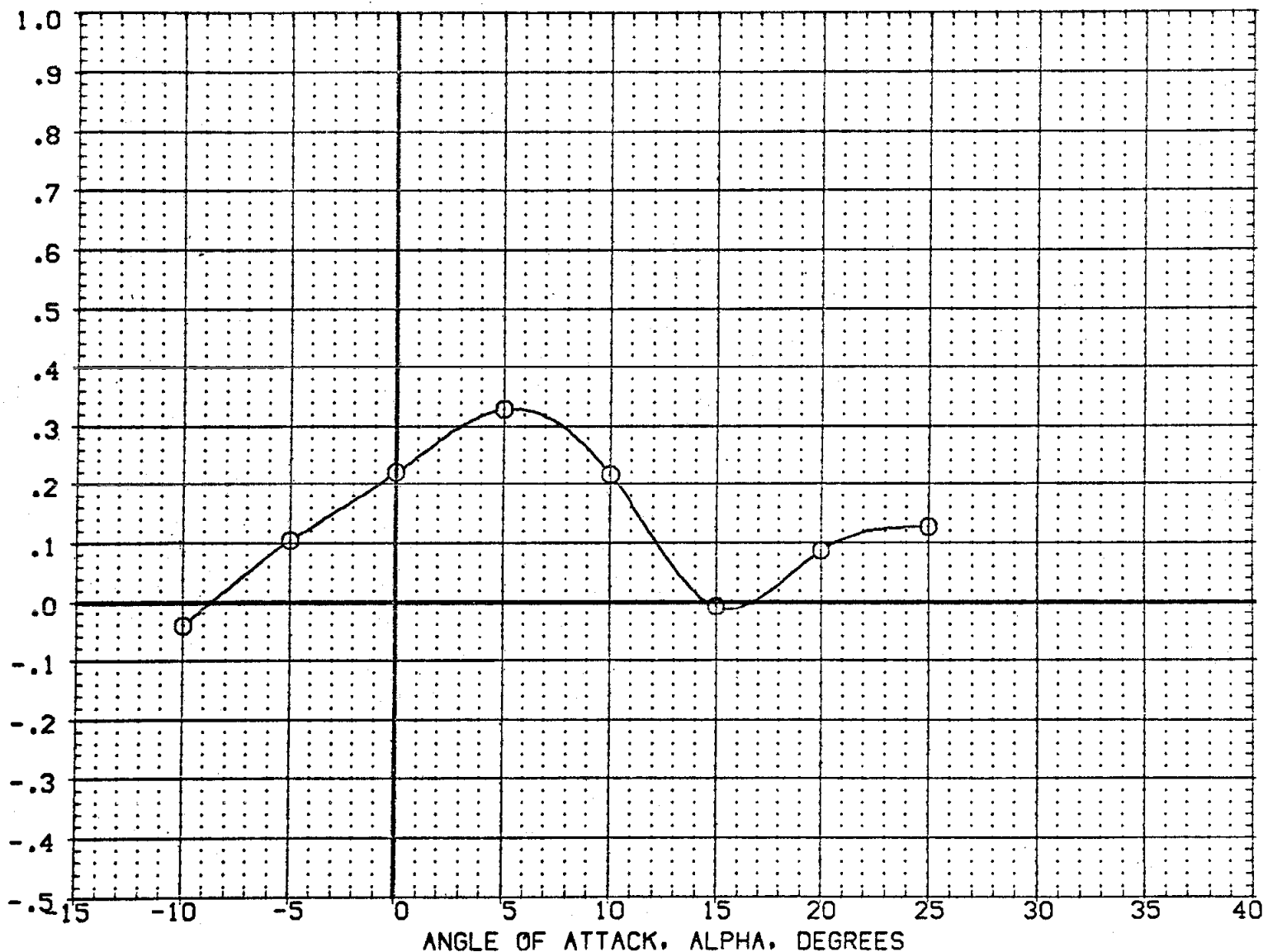


FIG 9 EFFECT OF BDFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2004) ○ 0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL

BOFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION		
13.750	62.000	.000	50.000	SREF	2690.0000	SQ.FT.
				LREF	474.8100	IN.
				BREF	936.6800	IN.
				XMRP	1076.6700	IN. X0
				YMRP	.0000	IN. Y0
				ZMRP	375.0000	IN. Z0
				SCALE	.0100	

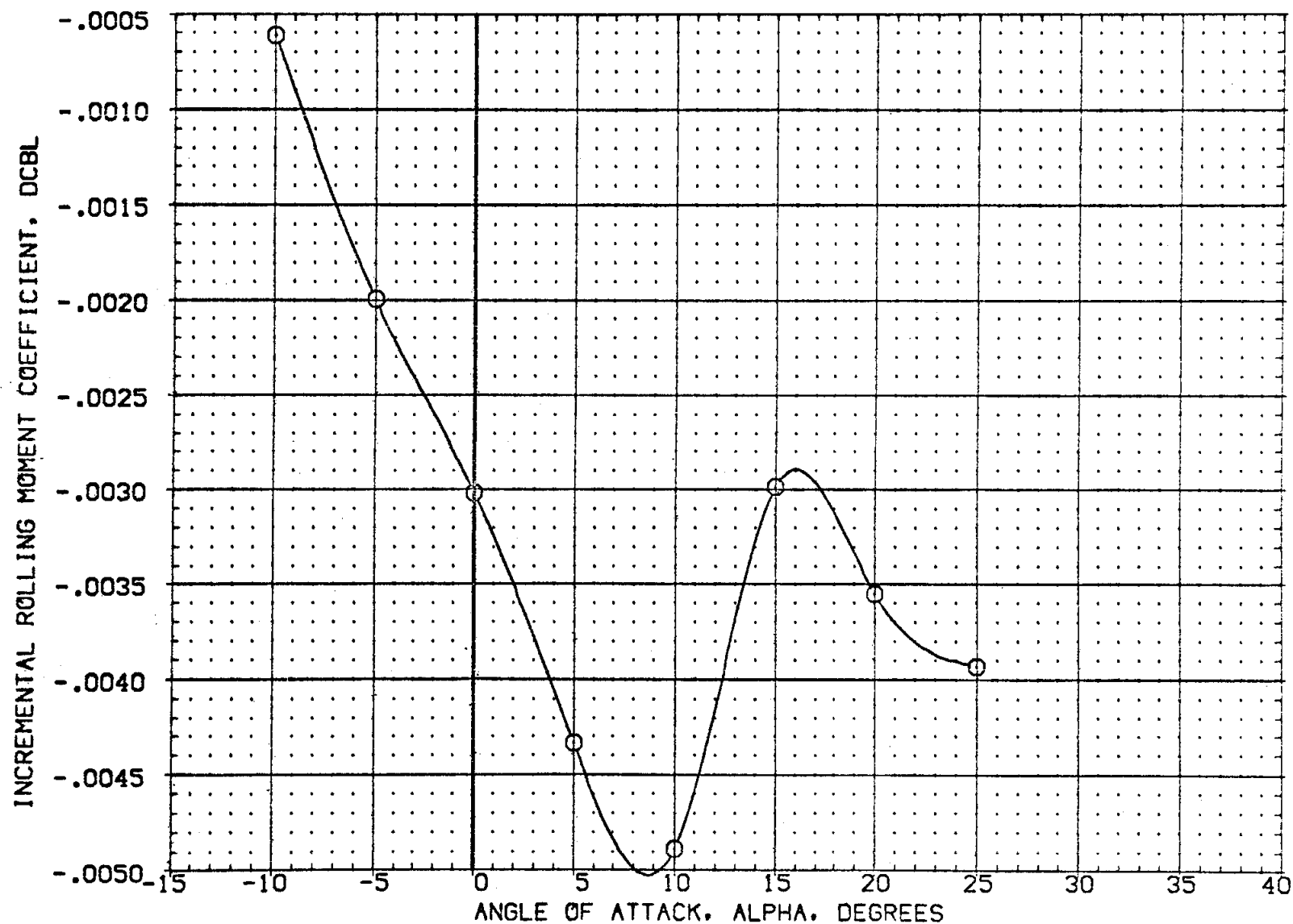


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2004) ○ GA105 CFHT100 MODEL 32-0 (01N49N52 ROLL

BOFLAP PCRC5 ELEVON Q-SIM  
13.750 62.000 .000 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

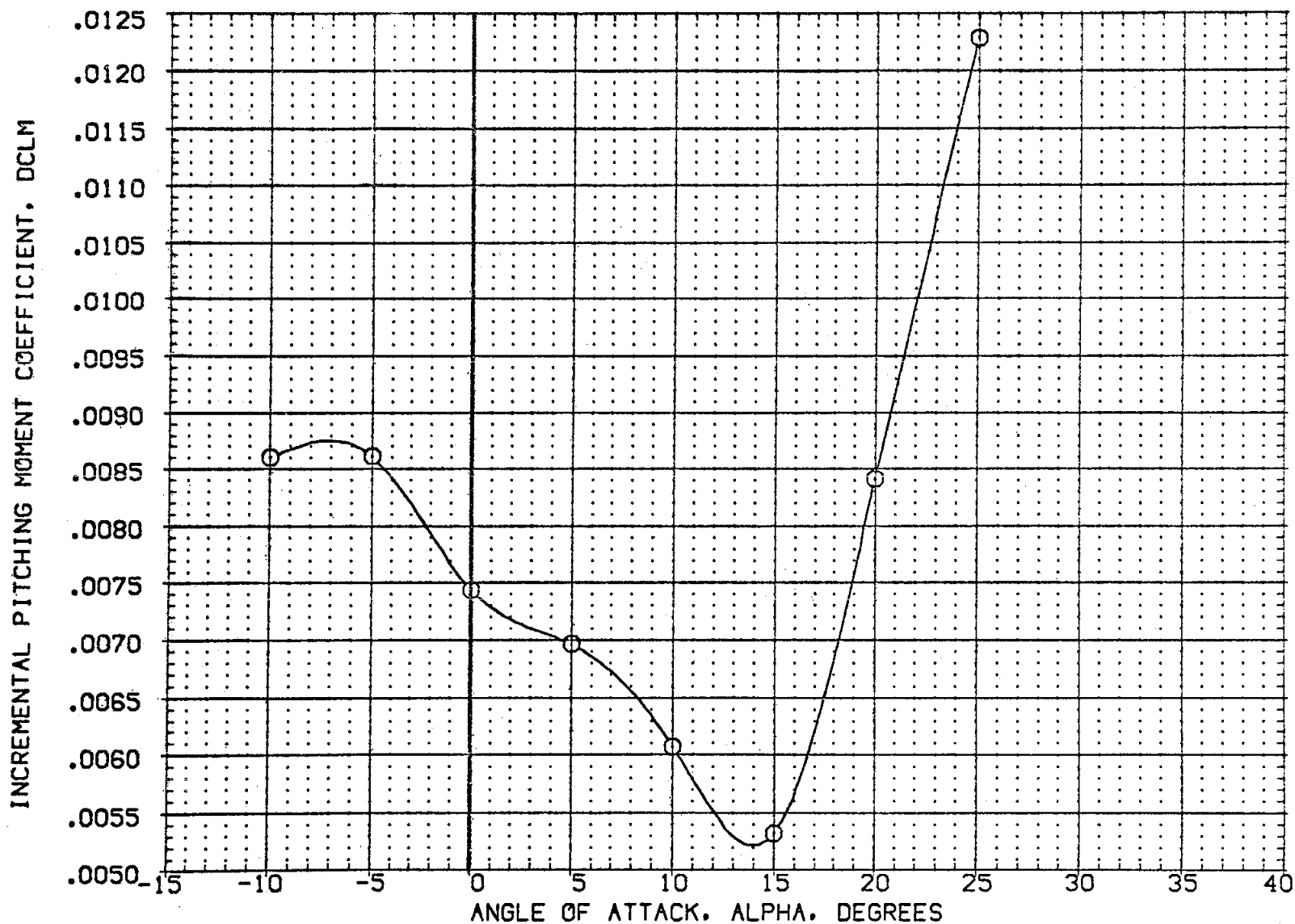


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2004) ○ 0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL

BOFLAP PCRC5 ELEVON 0-SIM  
13.750 62.000 .000 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

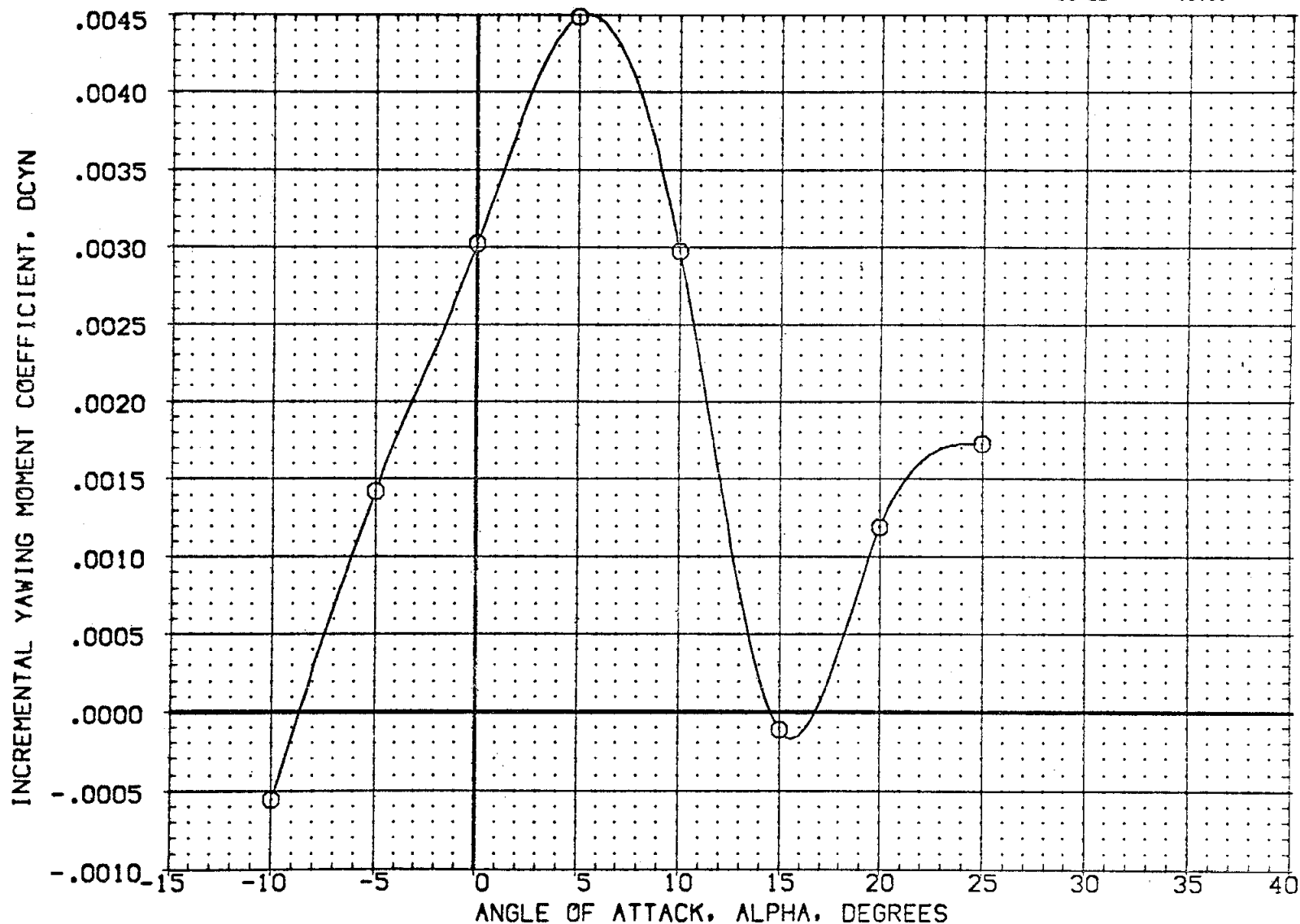


FIG 9 EFFECT OF BOFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH204N)	0A105 CPHT109 MODEL 32-0 (0)N49N52	13.750	62.000	.000	50.000	SREF 2690.0000 SQ.FT.
(ZH201F)	0A105 CPHT109 MODEL 32 0(0) NSI	13.750	.000	.000	.000	LREF 474.8100 IN.
						BREF 936.6800 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

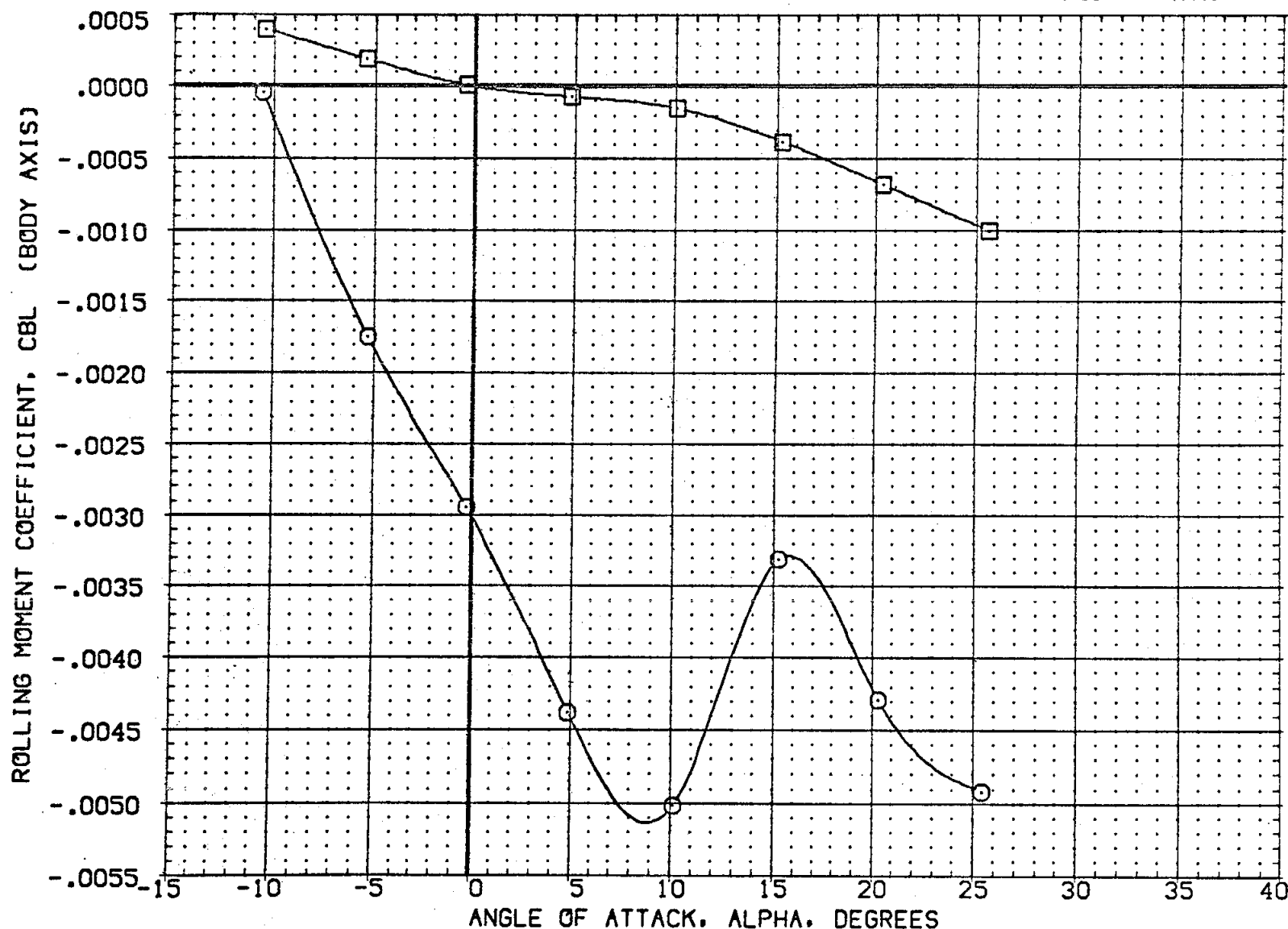


FIG 9 EFFECT OF BDflap DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ROLL	RCS OFF	BDFLAP	PCRC	ELEVON	O-SIM	REFERENCE INFORMATION
(ZH204N)	0A105 CFHT109 MODEL 32-0 (0)N49N52			13.750	62.000	.000	50.000	SREF 2690.0000 SQ.FT.
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) N51			13.750	.000	.000	.000	LREF 474.8100 IN.
								BREF 936.6800 IN.
								XMRP 1076.6700 IN. X0
								YMRP .0000 IN. Y0
								ZMRP 375.0000 IN. Z0
								SCALE .0100

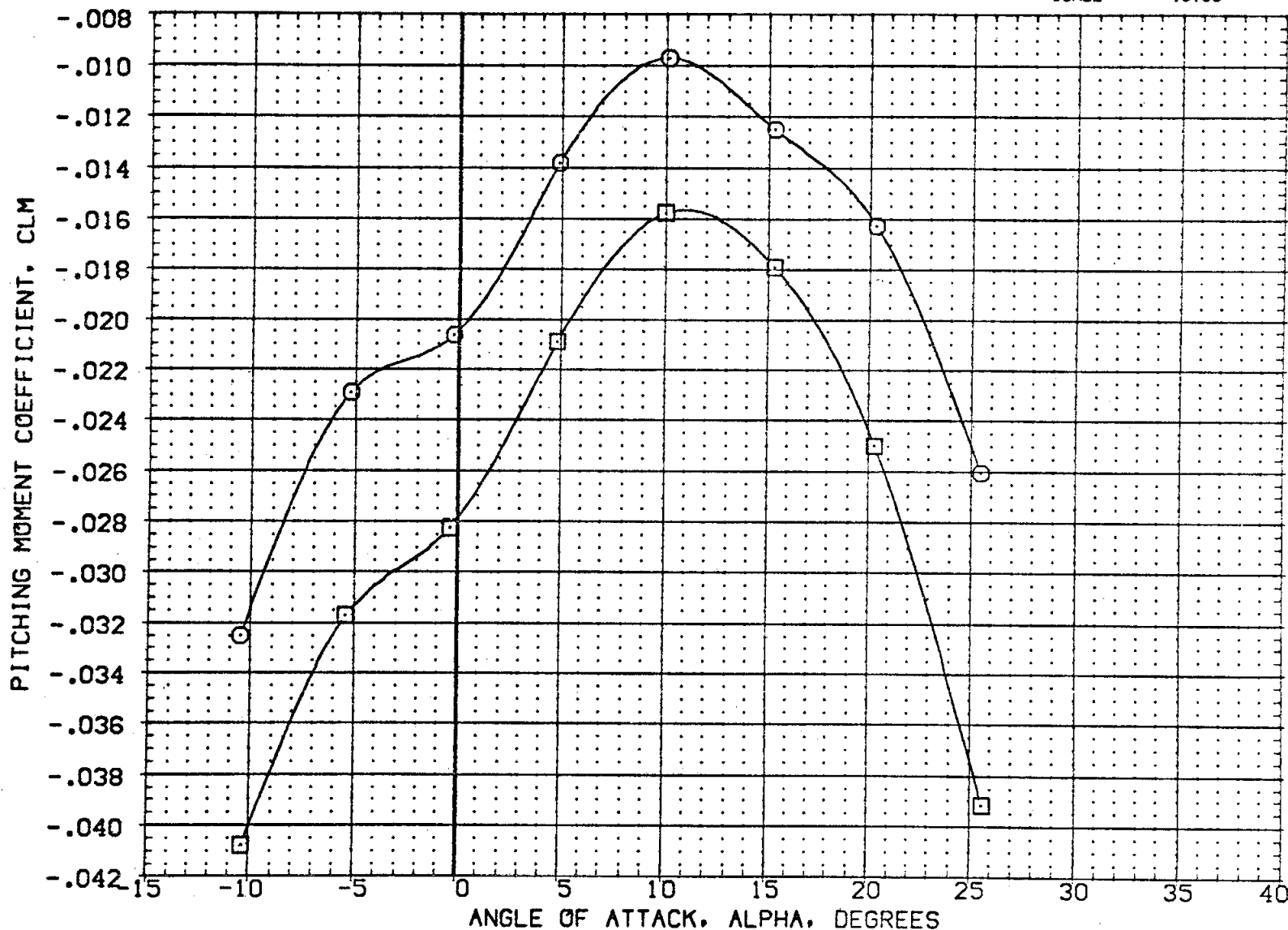


FIG 9 EFFECT OF BDFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ROLL	RCS OFF	BDFLAP	PCRCSS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(ZH204N)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL		13.750	62.000	.000	50.000	SREF	2690.0000	SQ.FT.
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) NSI	RCS OFF		13.750	.000	.000	.000	LREF	474.8100	IN.
								BREF	936.6800	IN.
								XMRP	1076.6700	IN. X0
								YMRP	.0000	IN. Y0
								ZMRP	375.0000	IN. Z0
								SCALE	.0100	

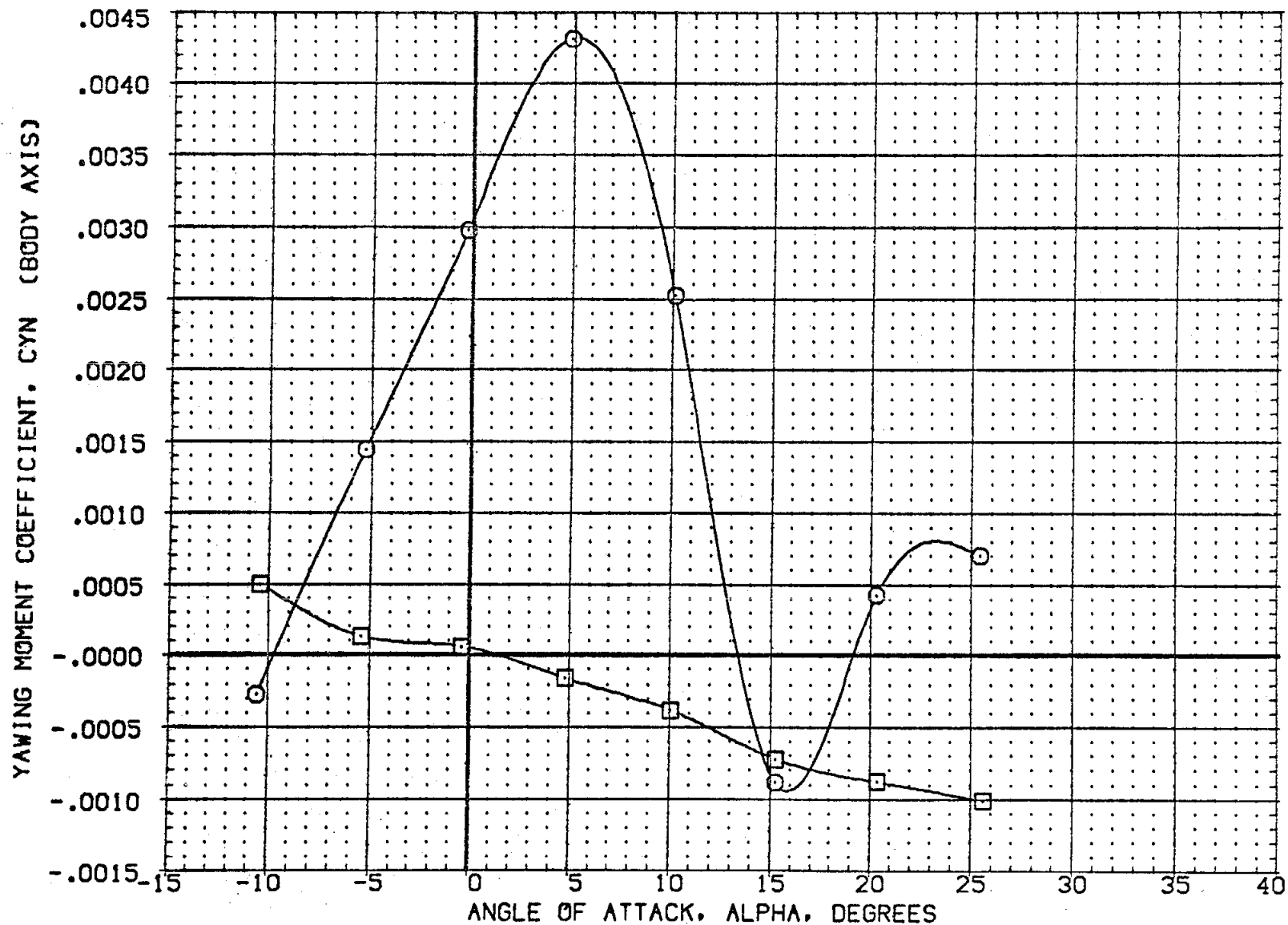


FIG 9 EFFECT OF BDFLAP DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	PCRC	SPDBRK	Q-SIM	REFERENCE INFORMATION		
(CH2034)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-20.000	158.000	.000	20.000	SREF	2690.0000	SQ.FT.
(CQ1008)	0A-85 CFHT101 MODEL 32-0 (0)N49N52 ROLL		158.000		20.000	LREF	474.8100	IN.
(CH2033)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	20.000	158.000	.000	20.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

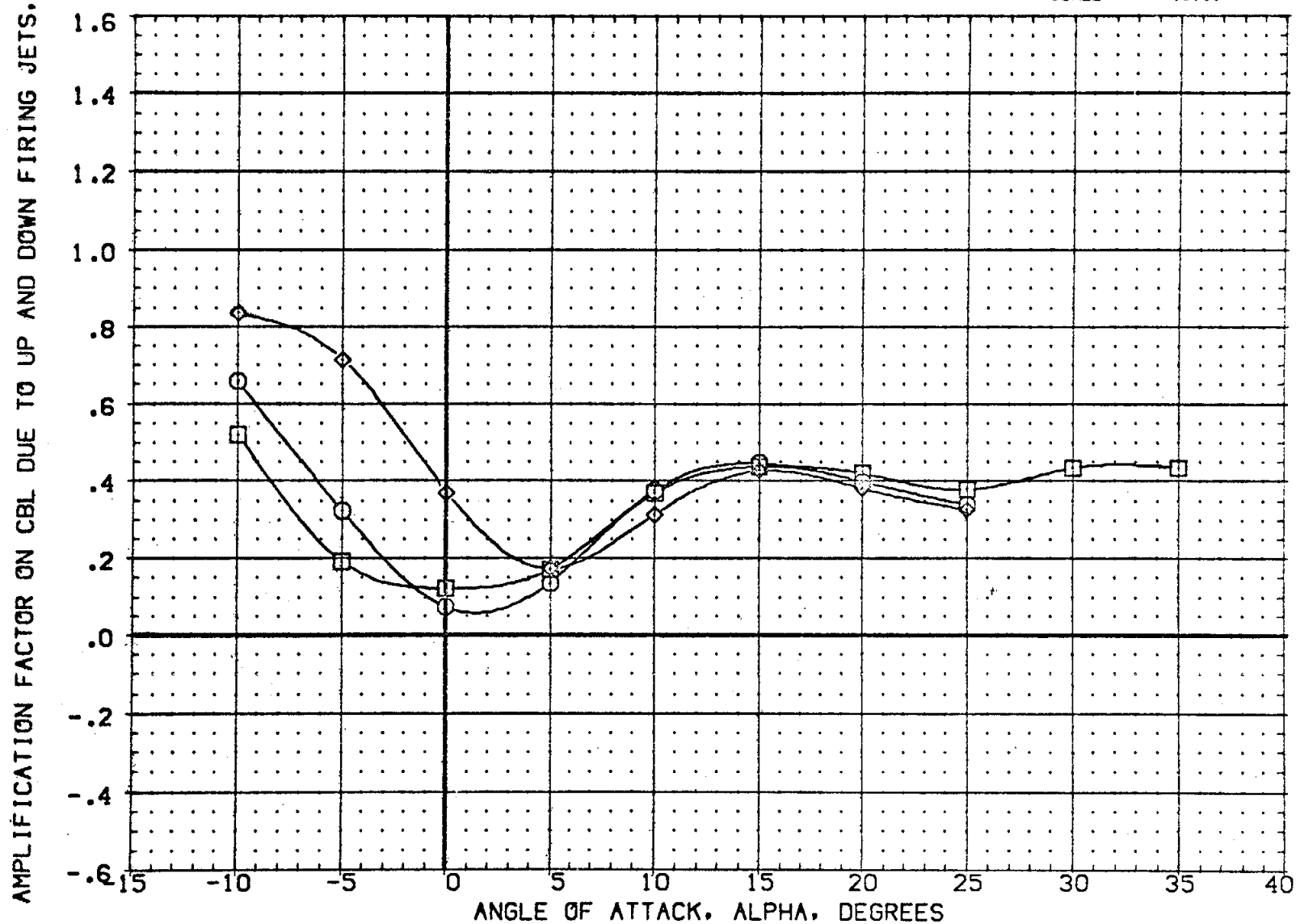


FIG 10 EFFECT OF RUDDER DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	PCRC5	SPDBRK	Q-SIM	REFERENCE INFORMATION		
(CH2034)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-20.000	158.000	.000	20.000	SREF	2690.0000	SQ.FT.
(C01008)	0A-85 CFHT101 MODEL 32-0 01N49N52 ROLL		158.000		20.000	LREF	474.8100	IN.
(CH2033)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	20.000	158.000	.000	20.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

CROSS COUPLING FACTOR ON CLM DUE TO UP AND DOWN FIRING JETS, KM,BL2

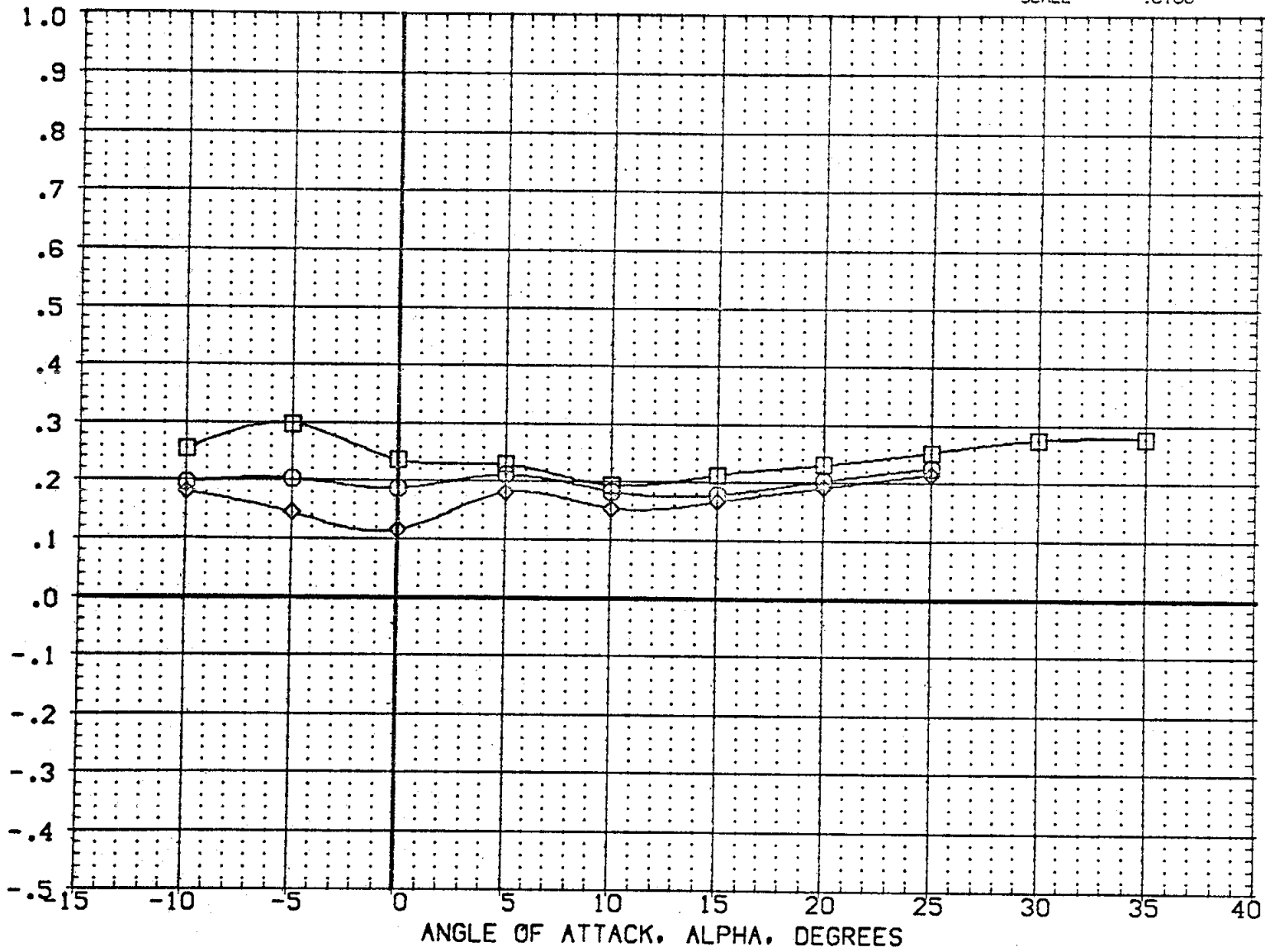


FIG 10 EFFECT OF RUDDER DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ROLL
(CH2034)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL
(C01008)	0A-85 CFHT101 MODEL 32-0 01N49N52	ROLL
(CH2033)	0A105 CFHT109 MODEL 32-0 (0)N49N52	ROLL

RUDDER	PCRC5	SPDBRK	Q-SIM	REFERENCE INFORMATION		
-20.000	158.000	.000	20.000	SREF	2690.0000	50.FT.
			20.000	LREF	474.8100	IN.
			20.000	BREF	936.6800	IN.
				XMRP	1076.6700	IN. X0
				YMRP	.0000	IN. Y0
				ZMRP	375.0000	IN. Z0
				SCALE	.0100	

CROSS COUPLING FACTOR ON CYN DUE TO UP AND DOWN FIRING JETS. KYN.L2

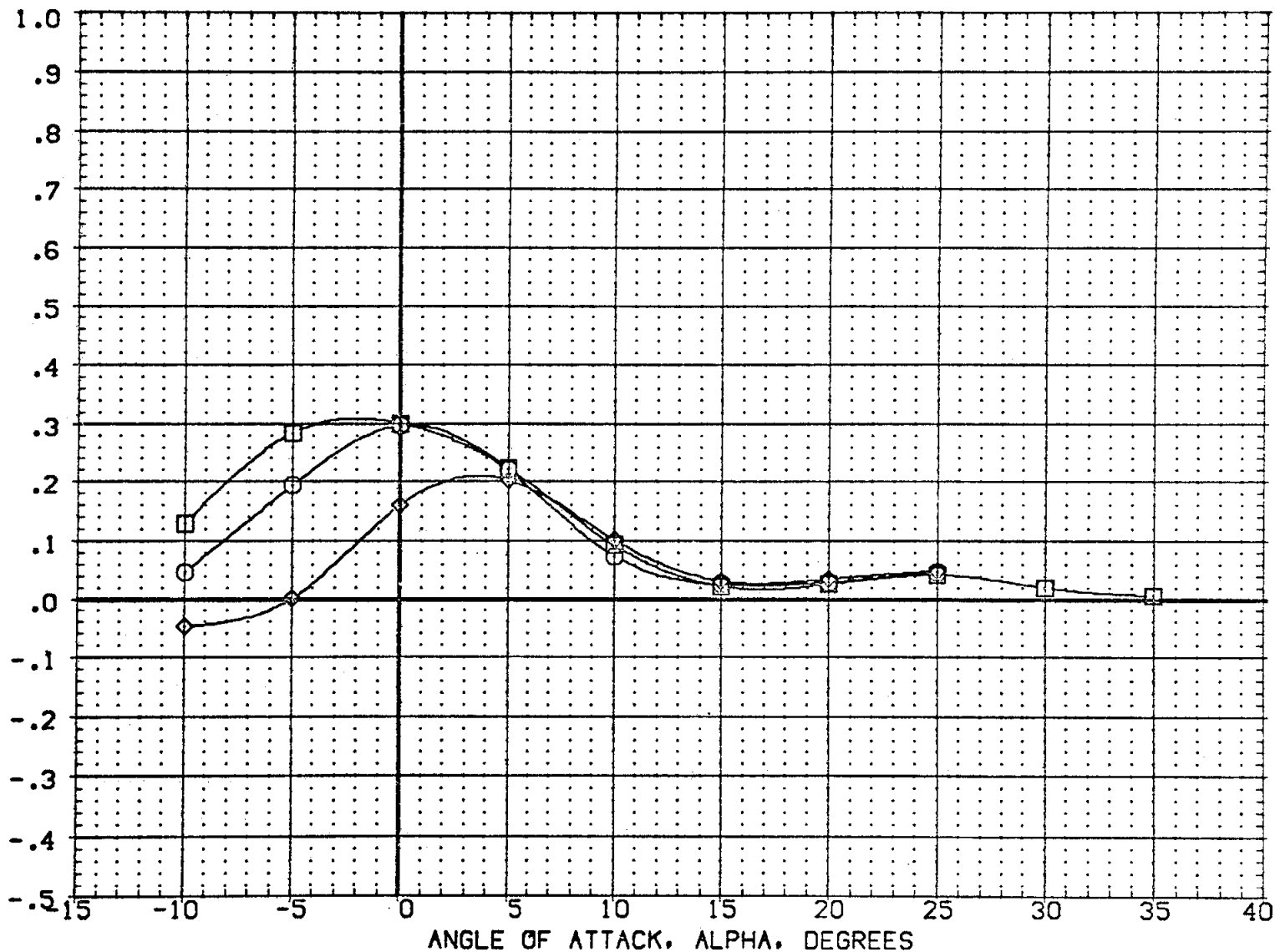


FIG 10 EFFECT OF RUDDER DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	PCRC5	SPOBRK	Q-SIM	REFERENCE INFORMATION		
(CH2034)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-20.000	158.000	.000	20.000	SREF	2690.0000	SQ.FT.
(CQ1008)	0A-85 CFHT101 MODEL 32-0 01N49N52 ROLL		158.000		20.000	LREF	474.8100	IN.
(CH2033)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	20.000	158.000	.000	20.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

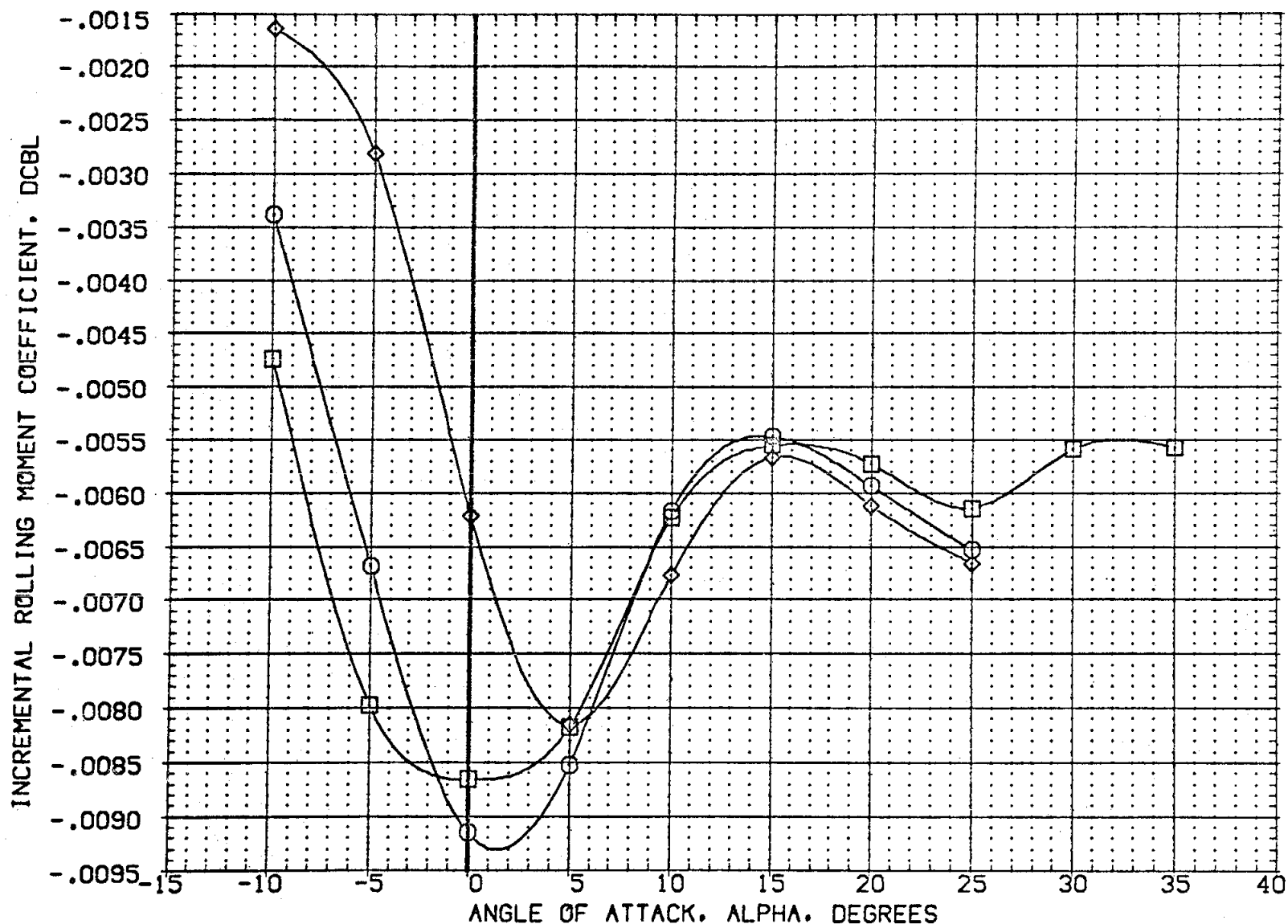


FIG 10 EFFECT OF RUDDER DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	PCPCS	SPDBRK	Q-SIM	REFERENCE INFORMATION		
(CH2034)	DA105 CFHT109 MODEL 32-0 (C)N49N52 ROLL	-20.000	158.000	.000	20.000	SREF	2690.0000	SQ.FT.
(CQ1008)	DA-85 CFHT101 MODEL 32-0 (C)N49N52 ROLL		158.000		20.000	LREF	474.8100	IN.
(CH2033)	DA105 CFHT109 MODEL 32-0 (C)N49N52 ROLL	20.000	158.000	.000	20.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

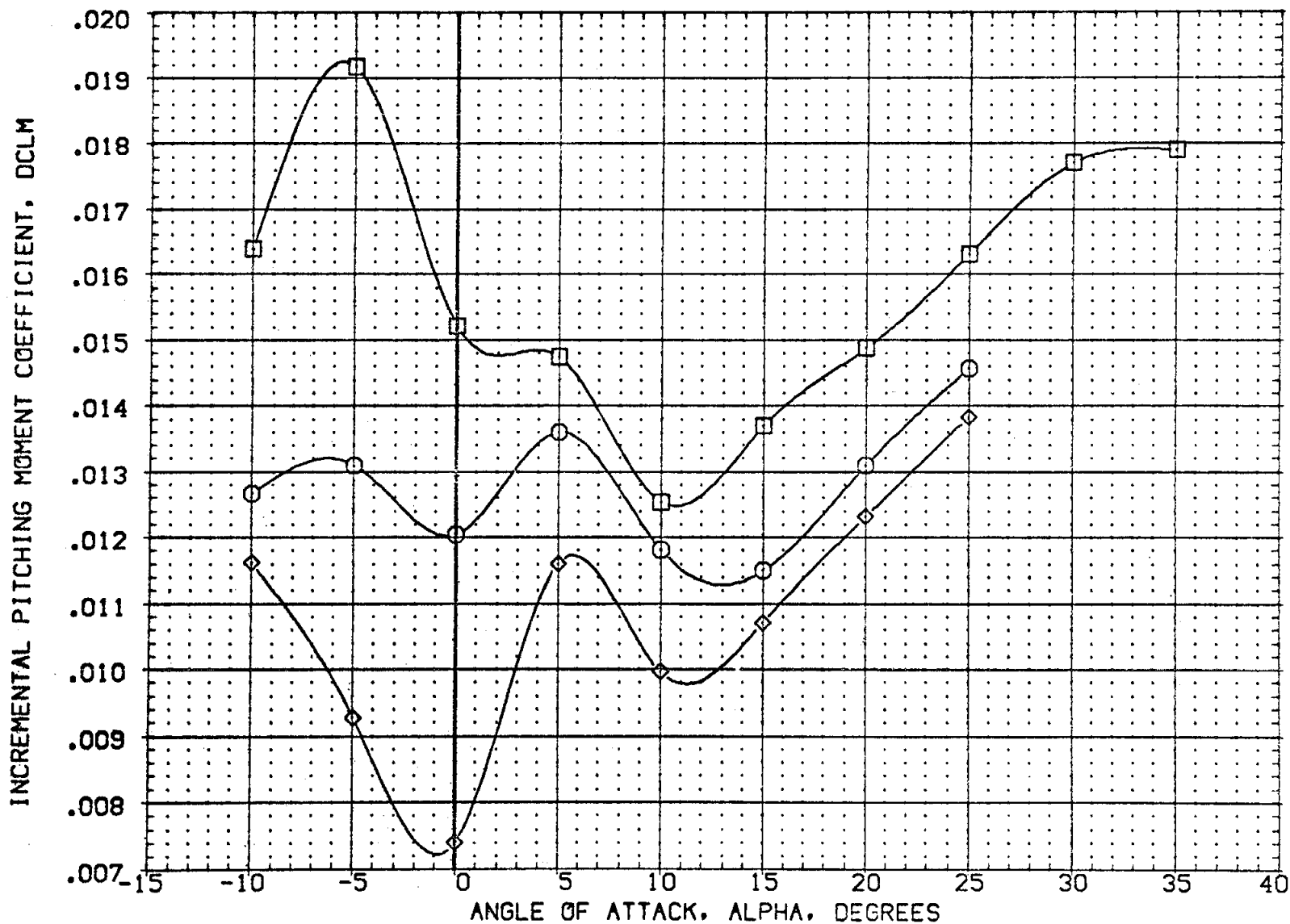


FIG 10 EFFECT OF RUDDER DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	PCRC	SPDBRK	Q-SIM	REFERENCE INFORMATION		
(CH2034)	OA105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	-20.000	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(CQ1008)	OA-85 CFHT101 MODEL 32-0 01N49N52	ROLL	20.000	158.000	20.000	20.000	LREF	474.8100 IN.
(CH2033)	OA105 CFHT109 MODEL 32-0 (0)N49N52	ROLL	20.000	158.000	.000	20.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

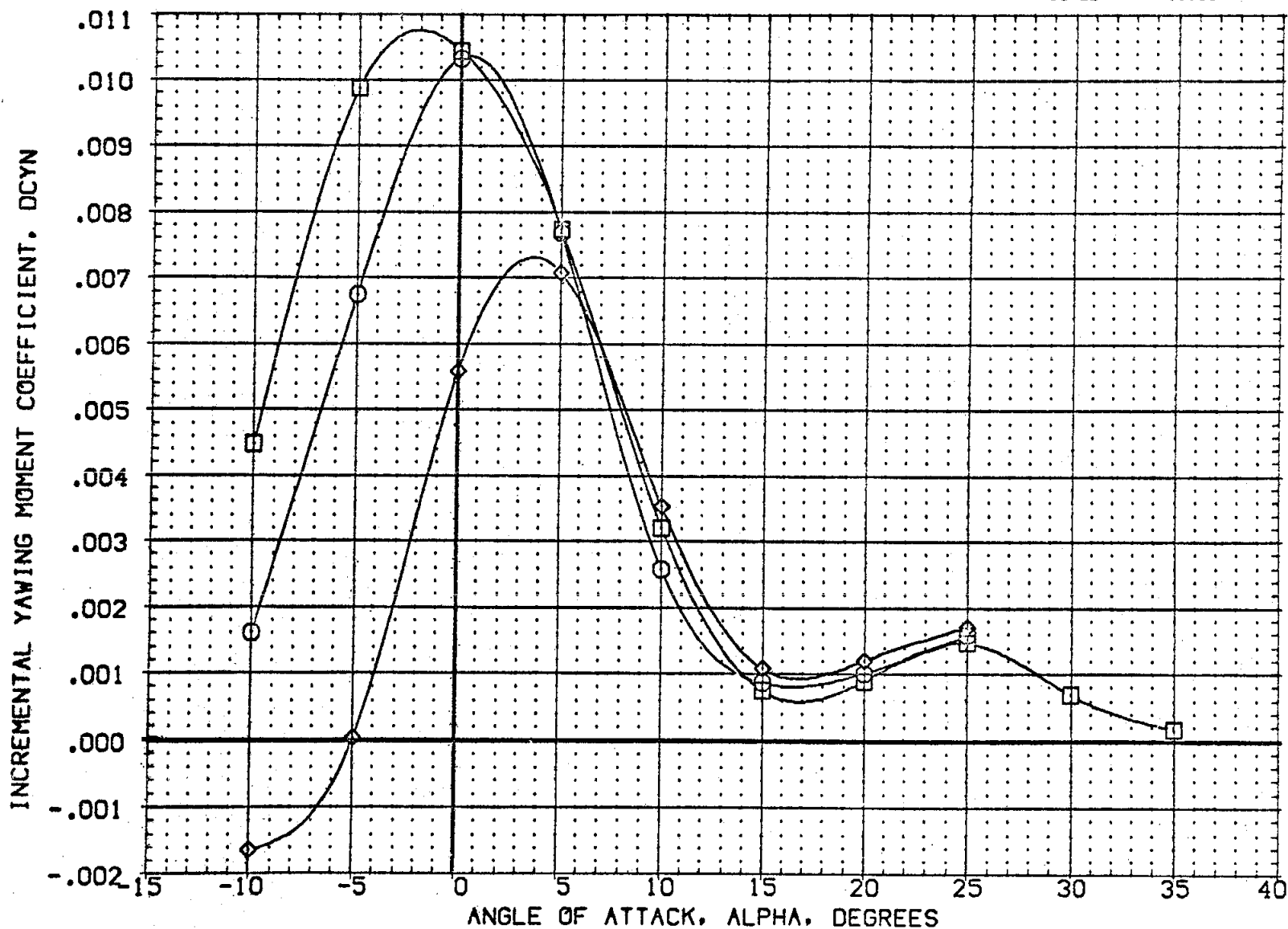


FIG 10 EFFECT OF RUDDER DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	PCRC	SPDRK	Q-SIM	REFERENCE INFORMATION		
(ZH234N)	DA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-20.000	158.000	.000	20.000	SREF	2690.0000	SQ.FT.
(Z0108F)	DA-85 CFHT101 MODEL 32-0 01 N46 N47 RCS OFF	.000	.000	.000	.000	LREF	474.8100	IN.
(ZH233N)	DA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	20.000	158.000	.000	20.000	BREF	936.6800	IN.
(ZH210F)	DA105 CFHT109 MODEL 32-0 (0) N49N52 RCS OFF	-20.000	.000	.000	.000	XMRP	1076.6700	IN. X0
(Z0103F)	DA-85 CFHT101 MODEL 32-0 01 N52 RCS OFF	.000	.000	.000	.000	YMRP	.0000	IN. Y0
(ZH209F)	DA105 CFHT109 MODEL 32-0 (0) N49N52 RCS OFF	20.000	.000	.000	.000	ZMRP	375.0000	IN. Z0
						SCALE	.0100	

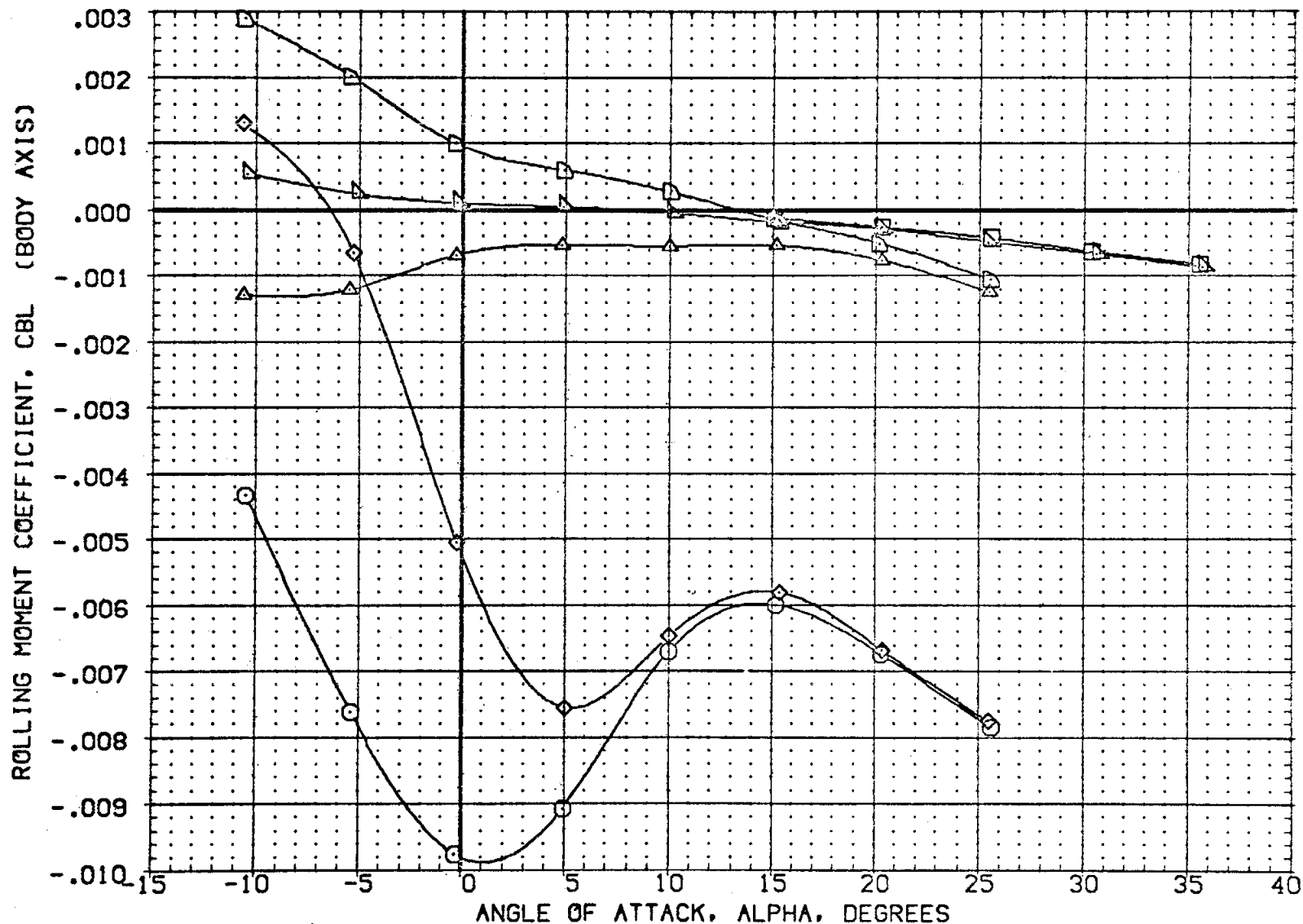


FIG 10 EFFECT OF RUDDER DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	PC RCS	SPOBRK	Q-SIM	REFERENCE INFORMATION
(ZH234N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-20.000	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(ZQ108F)	0A-85 CFHT101 MODEL 32-0 01 N46 N47 RCS OFF	.000	.000	.000	.000	LREF 474.8100 IN.
(ZH233N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	20.000	158.000	.000	20.000	BREF 936.6800 IN.
(ZH210F)	0A105 CFHT109 MODEL 32 0(01)N49N52 RCS OFF	-20.000	.000	.000	.000	XMRP 1076.6700 IN. X0
(ZQ103F)	0A-85 CFHT101 MODEL 32-0 01 N52 RCS OFF	.000	.000	.000	.000	YMRP .0000 IN. Y0
(ZH209F)	0A105 CFHT109 MODEL 32 0(0) N49N52 RCS OFF	20.000	.000	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

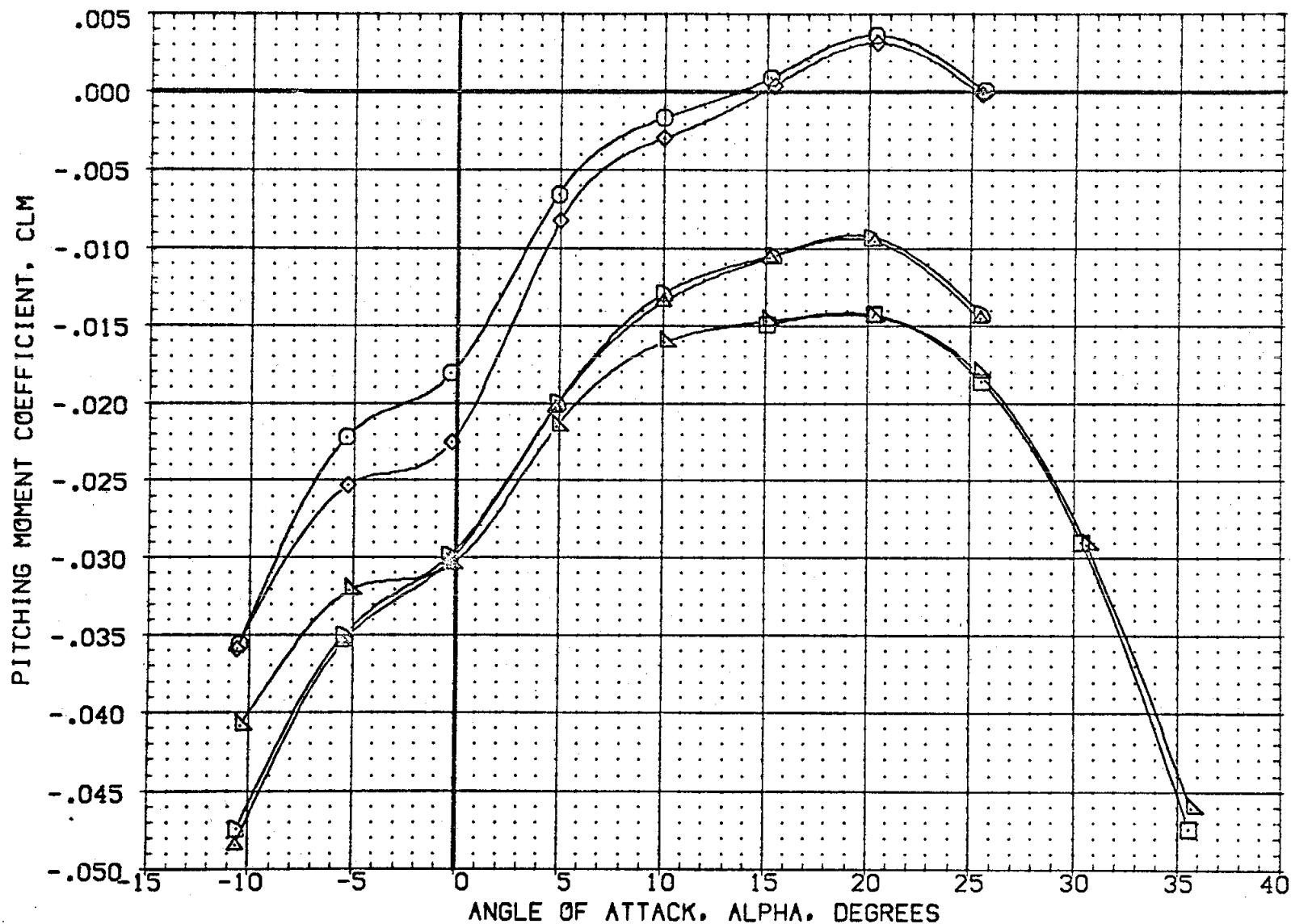


FIG 10 EFFECT OF RUDDER DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	PCRC	SPDBRK	Q-SIM	REFERENCE INFORMATION
(ZH234N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	-20.000	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(Z0108F)	0A-85 CFHT101 MODEL 32-0 01 N46 N47 RCS OFF		.000		.000	LREF 474.8100 IN.
(ZH233N)	0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL	20.000	158.000	.000	20.000	BREF 936.6800 IN.
(ZH210F)	0A105 CFHT109 MODEL 32 0(0) NN49N52 RCS OFF	-20.000	.000	.000	.000	XMRP 1076.6700 IN. X0
(Z0103F)	0A-85 CFHT101 MODEL 32-0 01 N52 RCS OFF		.000		.000	YMRP .0000 IN. Y0
(ZH209F)	0A105 CFHT109 MODEL 32 0(0) NN49N52 RCS OFF	20.000	.000	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

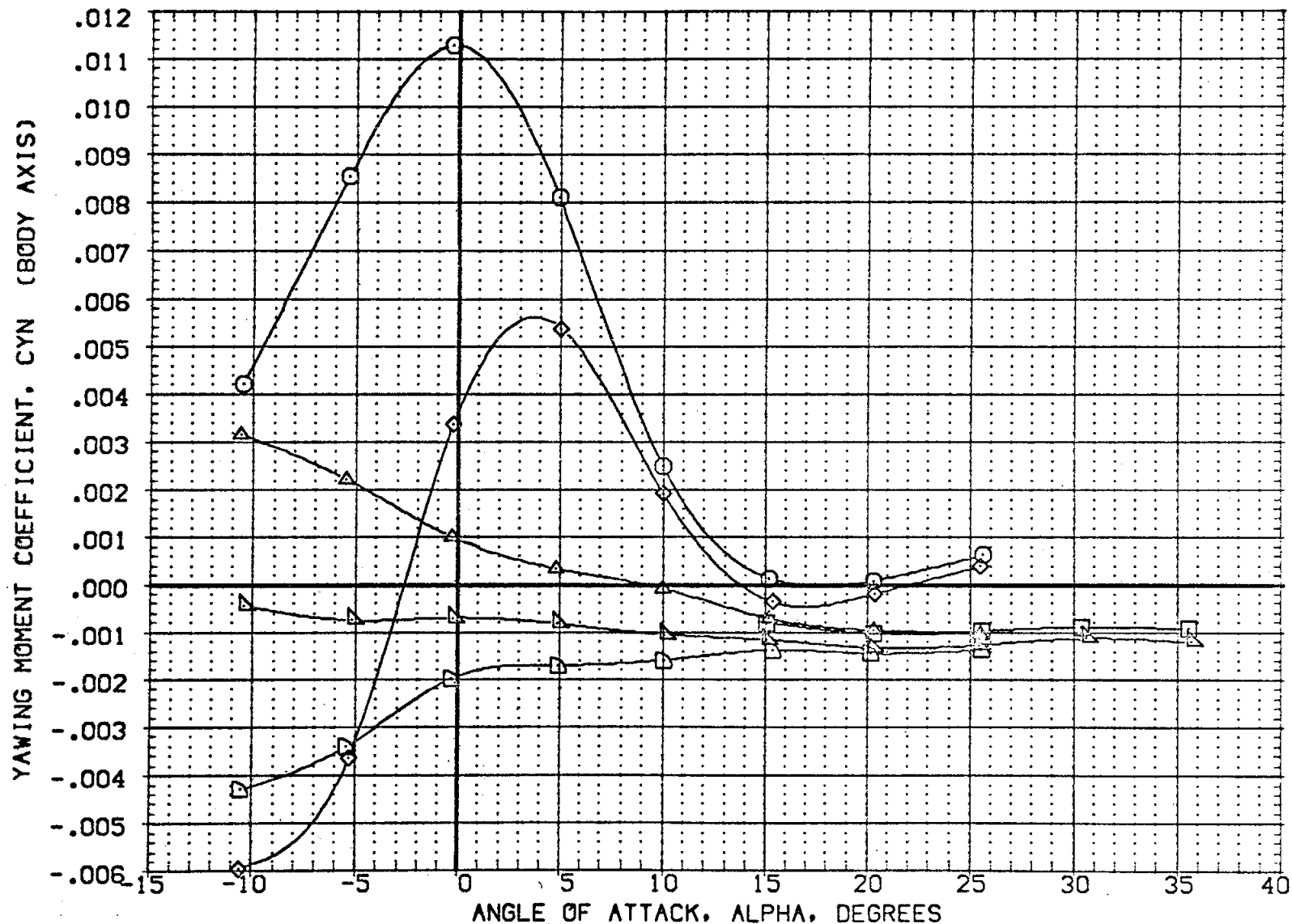


FIG 10 EFFECT OF RUDDER DEFLECTION ON N49N52 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2023) ○ 0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL

RUDDER	PC RCS	SPOBRK	Q-SIM	REFERENCE INFORMATION	
.000	446.000	55.000	7.000	SREF	2690.0000 SQ.FT.
				LREF	474.8100 IN.
				BREF	936.6800 IN.
				XMRP	1076.6700 IN. X0
				YMRP	.0000 IN. Y0
				ZMRP	375.0000 IN. Z0
				SCALE	.0100

AMPLIFICATION FACTOR ON CBL DUE TO UP AND DOWN FIRING JETS, KBLU/D

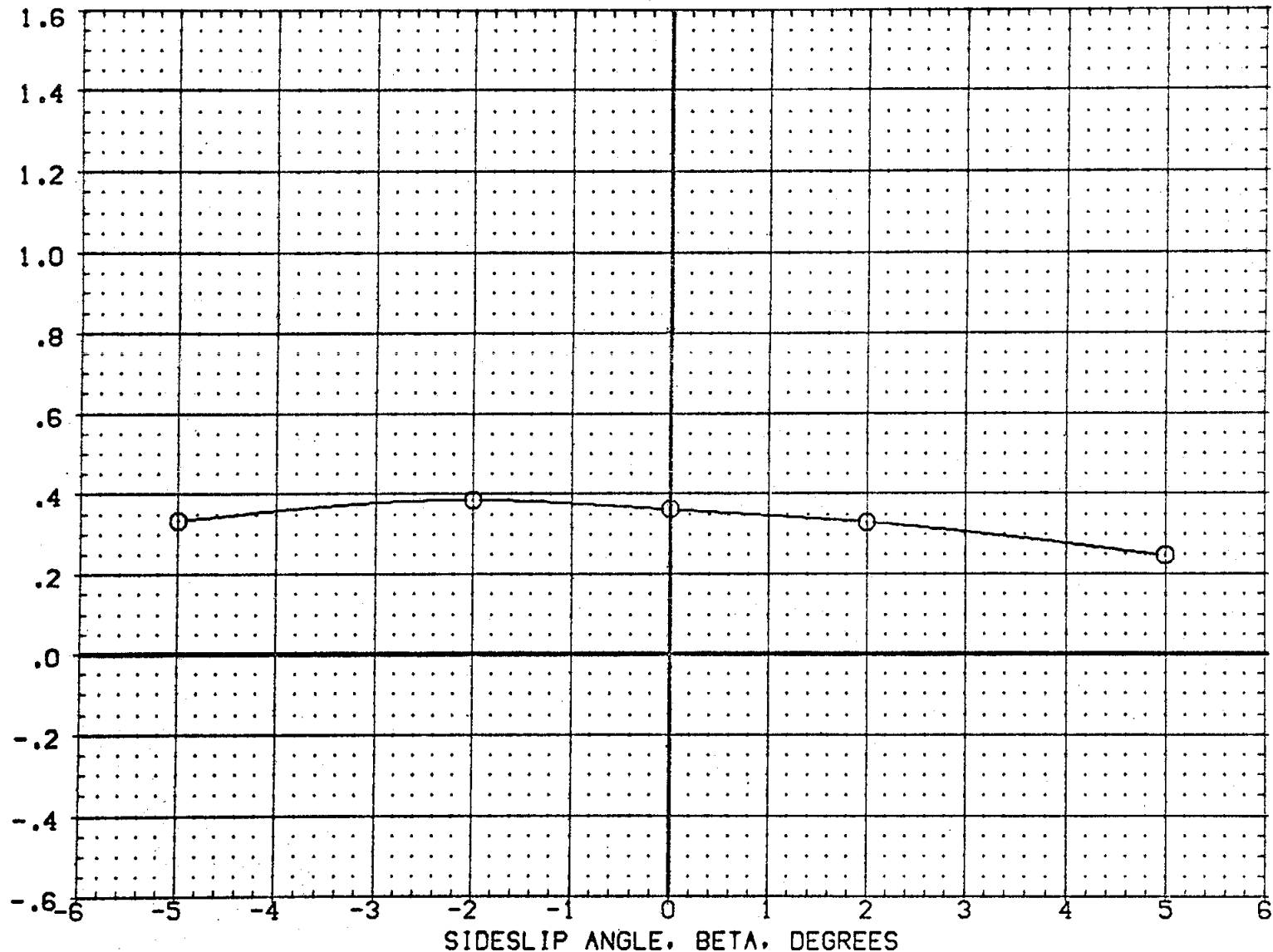


FIG 11 EFFECT OF SIDESLIP ANGLE ON N49N52 RCS JET INTERACTION, ALPHA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2023) ○ 0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL

RUDDER PCRC5 SPDBRK Q-SIM  
.000 446.000 55.000 7.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

CROSS COUPLING FACTOR ON CLM DUE TO UP AND DOWN FIRING JETS. KM,BL2

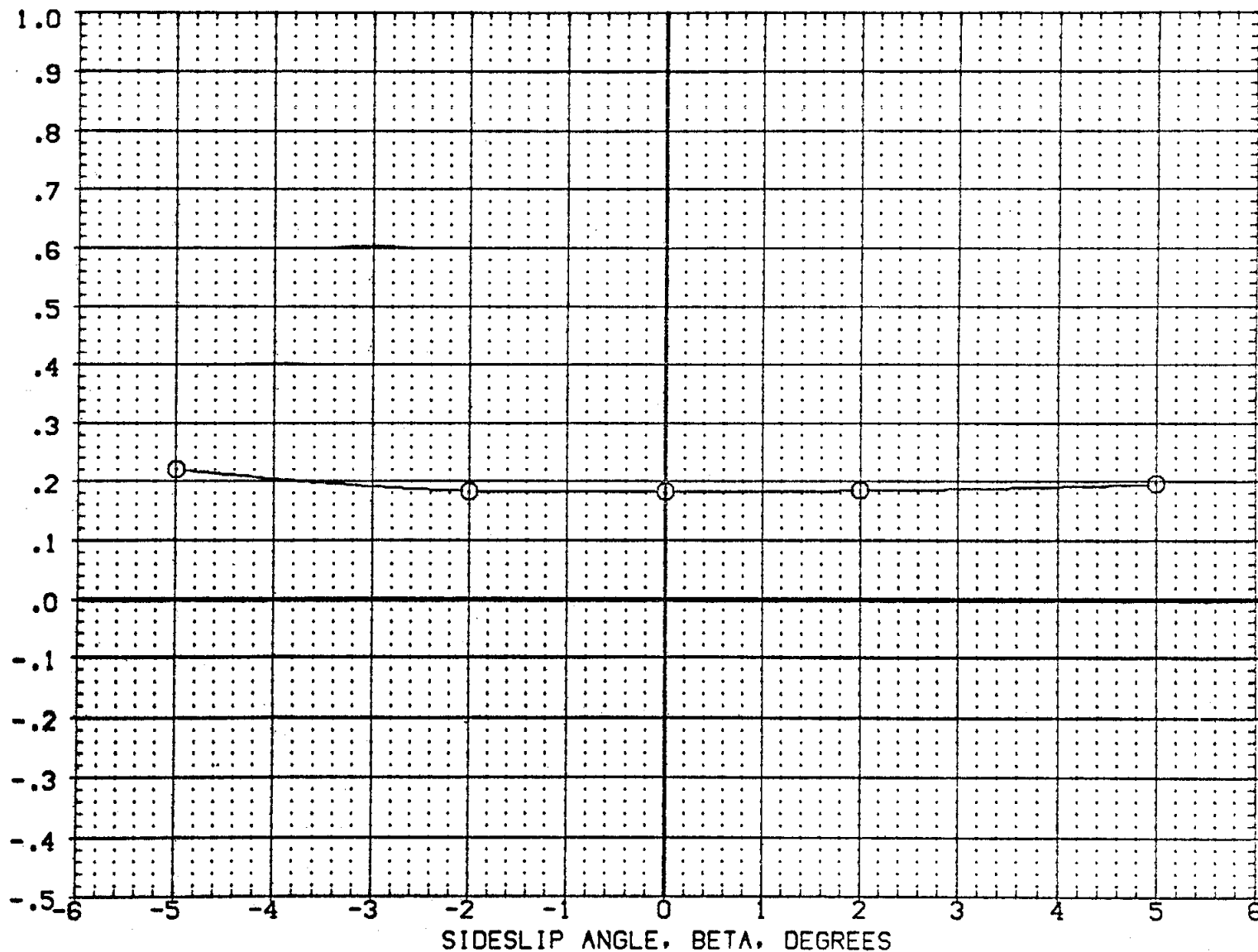


FIG 11 EFFECT OF SIDESLIP ANGLE ON N49N52 RCS JET INTERACTION, ALPHA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2023) ○ OA105 CFRT109 MODEL 32-0 (C)N49N52 ROLL

RUDDER	PCPCS	SPDBRK	Q-SIM	REFERENCE INFORMATION	
.000	446.000	55.000	7.000	SREF	2690.0000 SQ.FT.
				LREF	474.8100 IN.
				BREF	936.6800 IN.
				XMRP	1076.6700 IN. XC
				YMRP	.0000 IN. YC
				ZMRP	375.0000 IN. ZC
				SCALE	.0100

CROSS COUPLING FACTOR ON CYN DUE TO UP AND DOWN FIRING JETS. KYN.L2

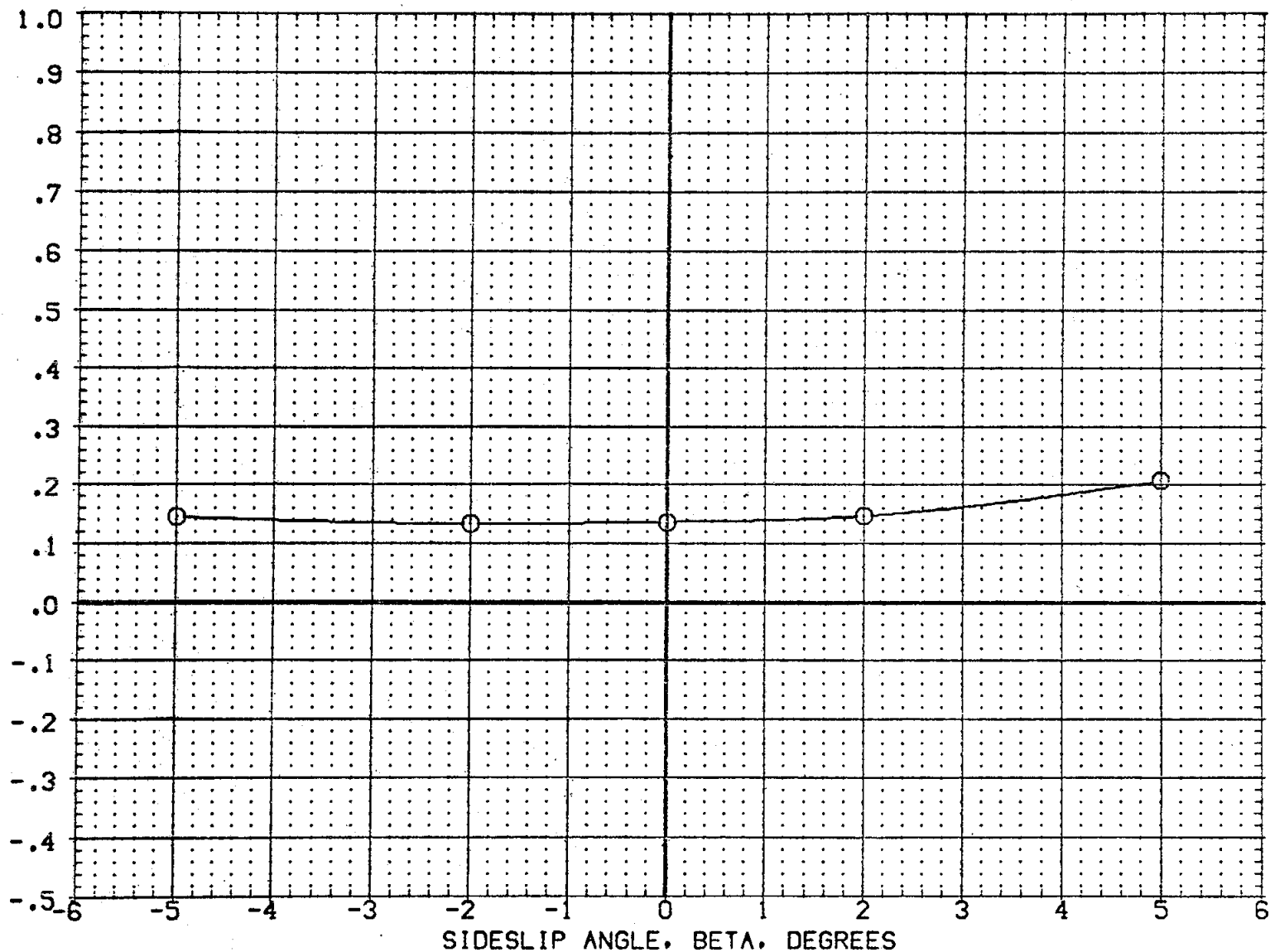


FIG 11 EFFECT OF SIDESLIP ANGLE ON N49N52 RCS JET INTERACTION, ALPHA = 0  
(A)MACH = 10.33

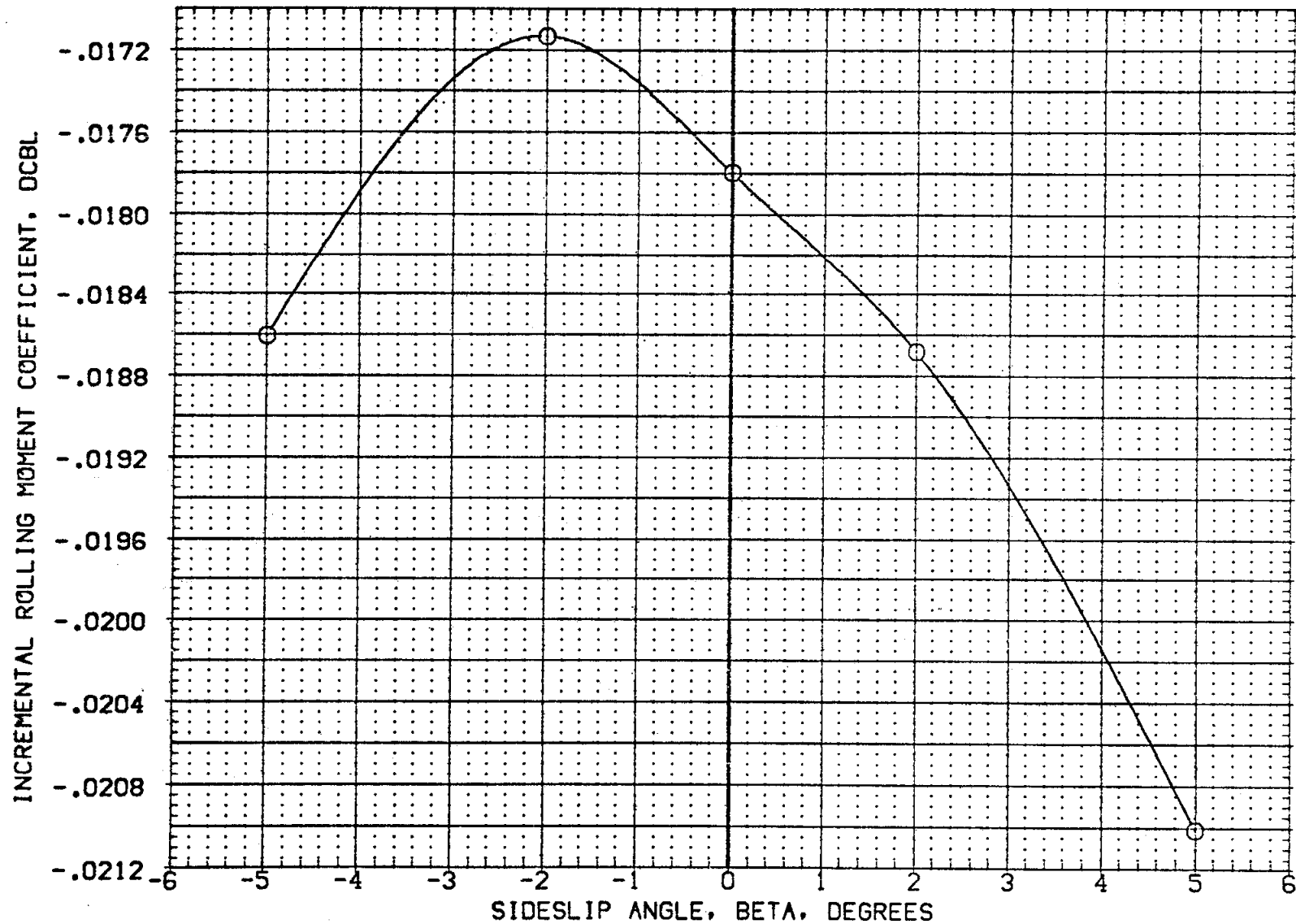


FIG 11 EFFECT OF SIDESLIP ANGLE ON N49N52 RCS JET INTERACTION,  $\alpha = 0$   
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (CH2023) ○ 0A105 CRHT109 MODEL 32-0 (0)N49N52 ROLL

RUDDER	PCRC	SPDBRK	Q-SIM	REFERENCE INFORMATION	
.000	446.000	55.000	7.000	SREF 2690.0000	SQ.FT.
				LREF 474.8100	IN.
				BREF 936.6900	IN.
				XMRP 1076.6700	IN. XO
				YMRP .0000	IN. YO
				ZMRP 375.0000	IN. ZO
				SCALE .0100	

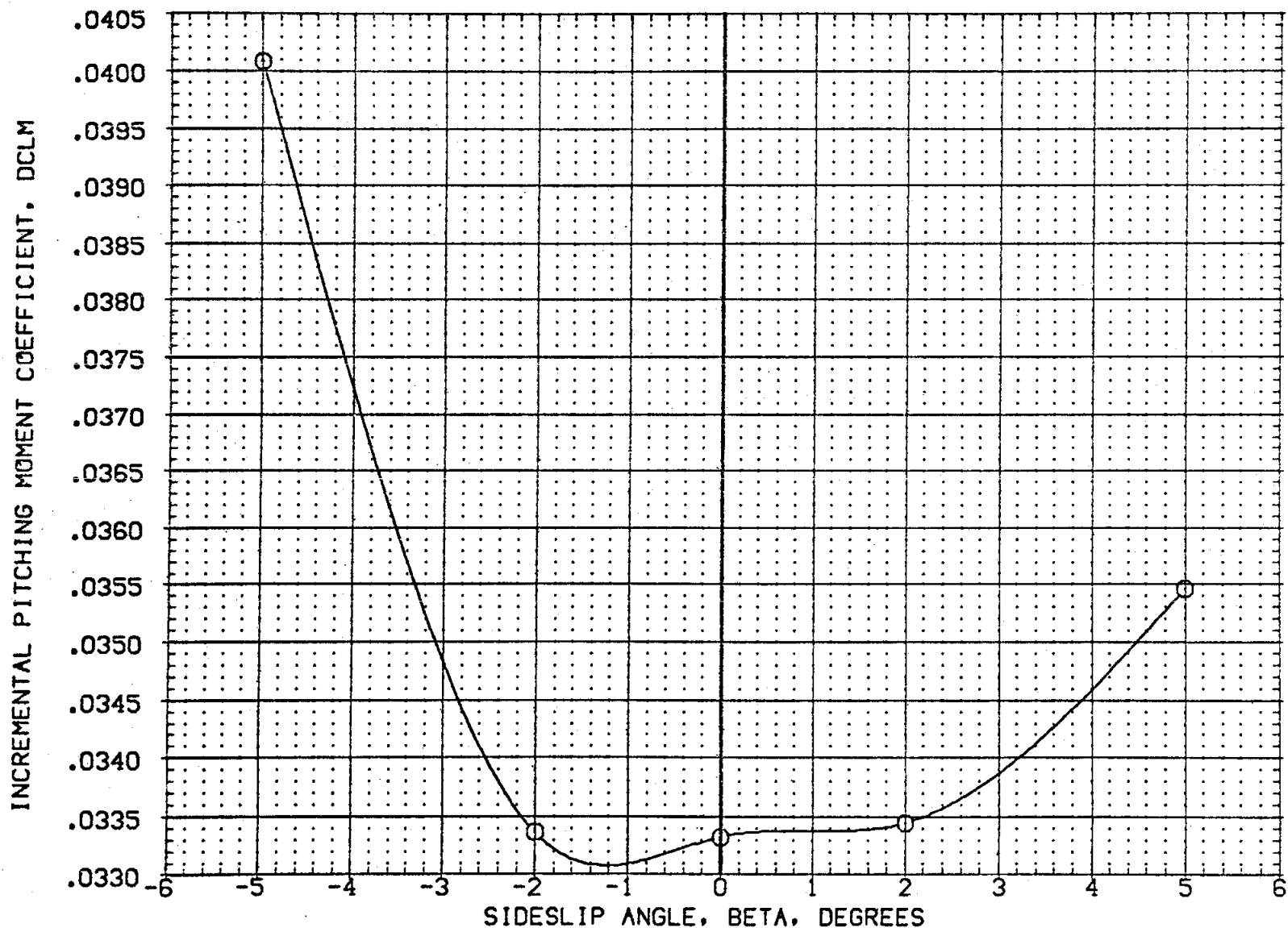


FIG 11 EFFECT OF SIDESLIP ANGLE ON N49N52 RCS JET INTERACTION, ALPHA = 0  
 (A)MACH = 10.33

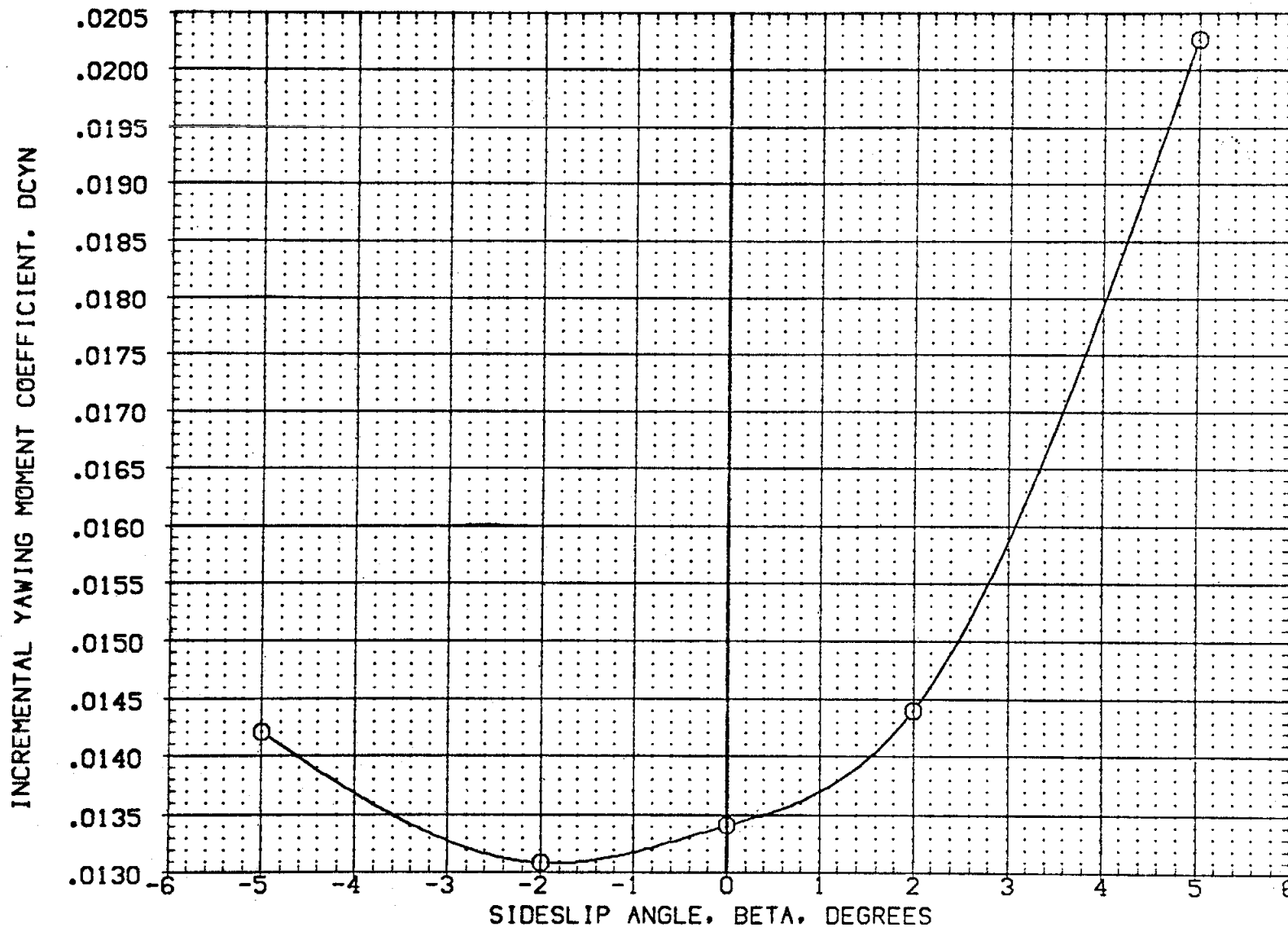


FIG 11 EFFECT OF SIDESLIP ANGLE ON N49N52 RCS JET INTERACTION, ALPHA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(ZH223N) ○ OA105 CFHT109 MODEL 32-0 (0)N49N52 ROLL  
(ZH204F) □ OA105 CFHT109 MODEL 32 0(0) NN49N52 RCS OFF

RUDDER	PC RCS	SPOBRK	Q-SIM	REFERENCE INFORMATION		
.000	446.000	55.000	7.000	SREF	2690.0000	SQ.FT.
.000	.000	55.000	.000	LREF	474.8100	IN.
				BREF	936.6800	IN.
				XMRP	1076.6700	IN. X0
				YMRP	.0000	IN. Y0
				ZMRP	375.0000	IN. Z0
				SCALE	.0100	

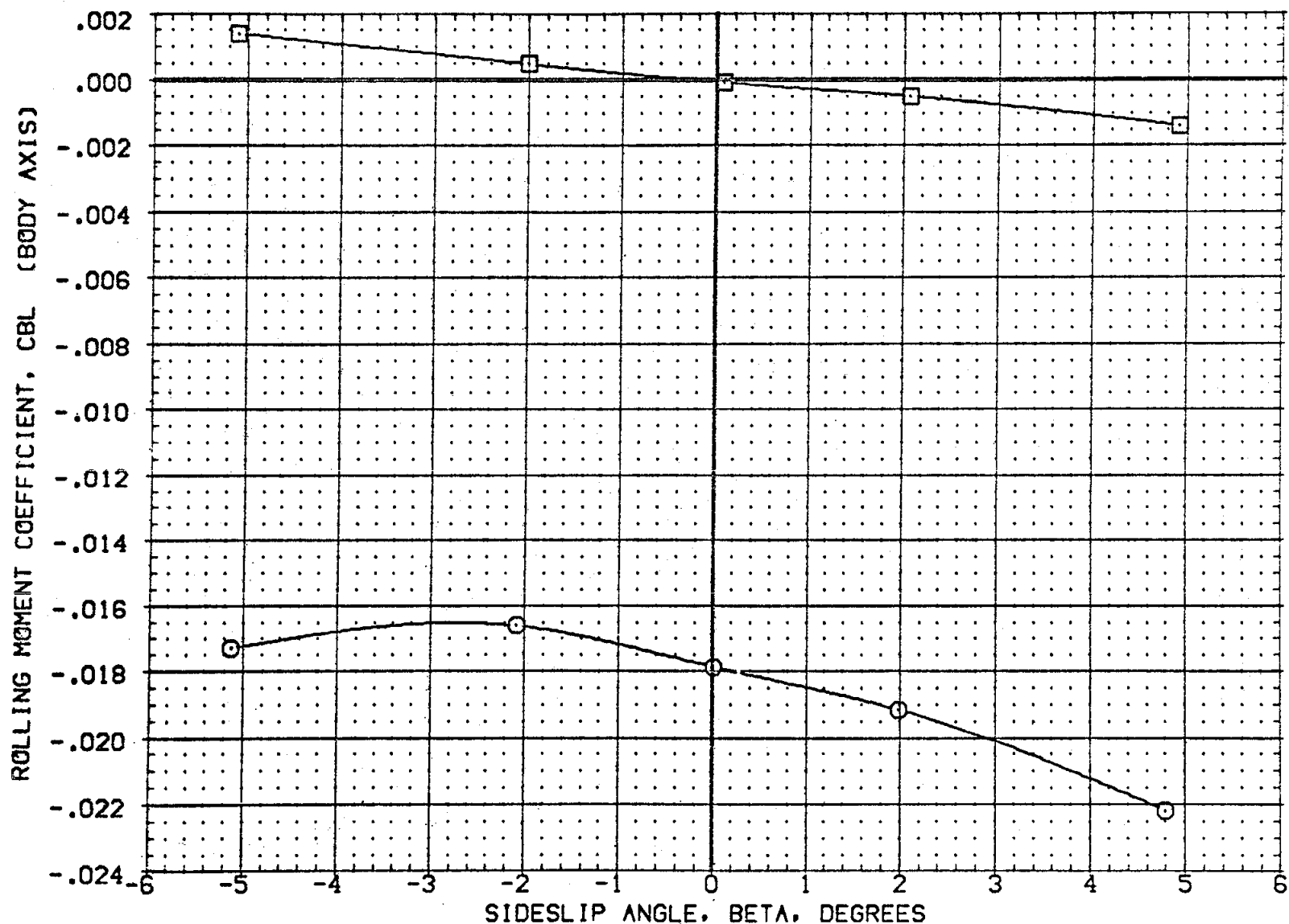


FIG 11 EFFECT OF SIDESLIP ANGLE ON N49N52 RCS JET INTERACTION, ALPHA = 0

(A)MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (Z4223N) ☐ 0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL  
 (Z4204F) ☐ 0A105 CFHT109 MODEL 32 0(0) NN49N52 RCS OFF

RUDDER	PC RCS	SPDBRK	Q-SIM	REFERENCE INFORMATION		
.000	446.000	55.000	7.000	SREF	2690.0000	SO.FT.
.000	.000	55.000	.000	LREF	474.8100	IN.
				BREF	936.6800	IN.
				XMRP	1076.6700	IN. XO
				YMRP	.0000	IN. YO
				ZMRP	375.0000	IN. ZO
				SCALE	.0100	

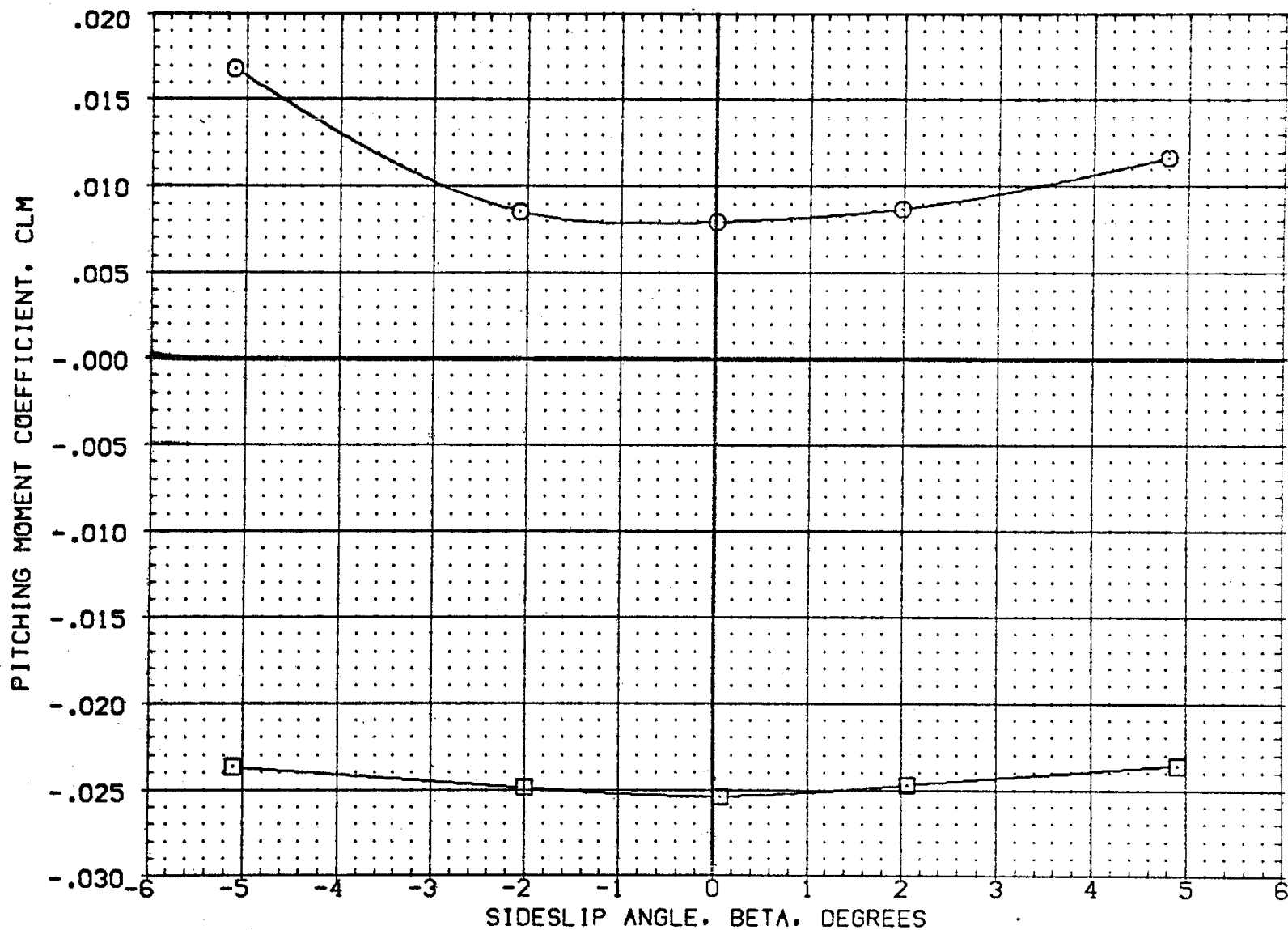


FIG 11 EFFECT OF SIDESLIP ANGLE ON N49N52 RCS JET INTERACTION, ALPHA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(ZH223N) ○ 0A105 CFHT109 MODEL 32-0 (0)N49N52 ROLL  
(ZH204F) □ 0A105 CFHT109 MODEL 32 0(0) N49N52 RCS OFF

RUDDER	PC RCS	SPDBRK	Q-SIM	REFERENCE INFORMATION		
.000	446.000	55.000	7.000	SREF	2690.0000	SQ.FT.
.000	.000	55.000	.000	LREF	474.8100	IN.
				BREF	936.6800	IN.
				XMRP	1076.6700	IN. X0
				YMRP	.0000	IN. Y0
				ZMRP	375.0000	IN. Z0
				SCALE	.0100	

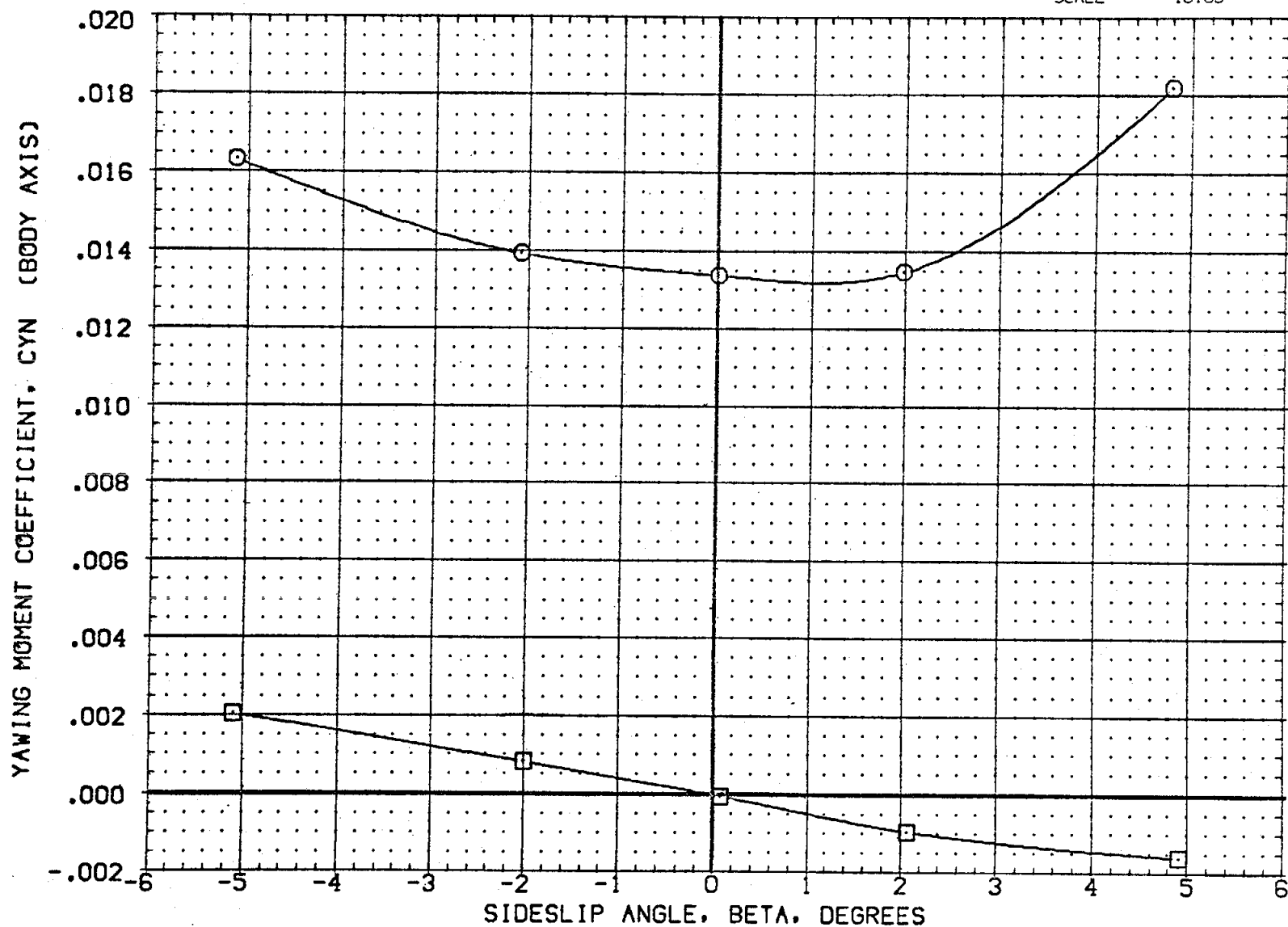


FIG 11 EFFECT OF SIDESLIP ANGLE ON N49N52 RCS JET INTERACTION,  $\alpha = 0$   
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION
(CH2030)	0A105 CFHT109 MODEL 32-0 (0)N51	-20.000	504.000	7.000	.000	SREF 2690.0000 SQ.FT.
(CH2021)	0A105 CFHT109 MODEL 32-0 (0)N51	.000	504.000	7.000	.000	LREF 474.8100 IN.
						BREF 936.6800 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

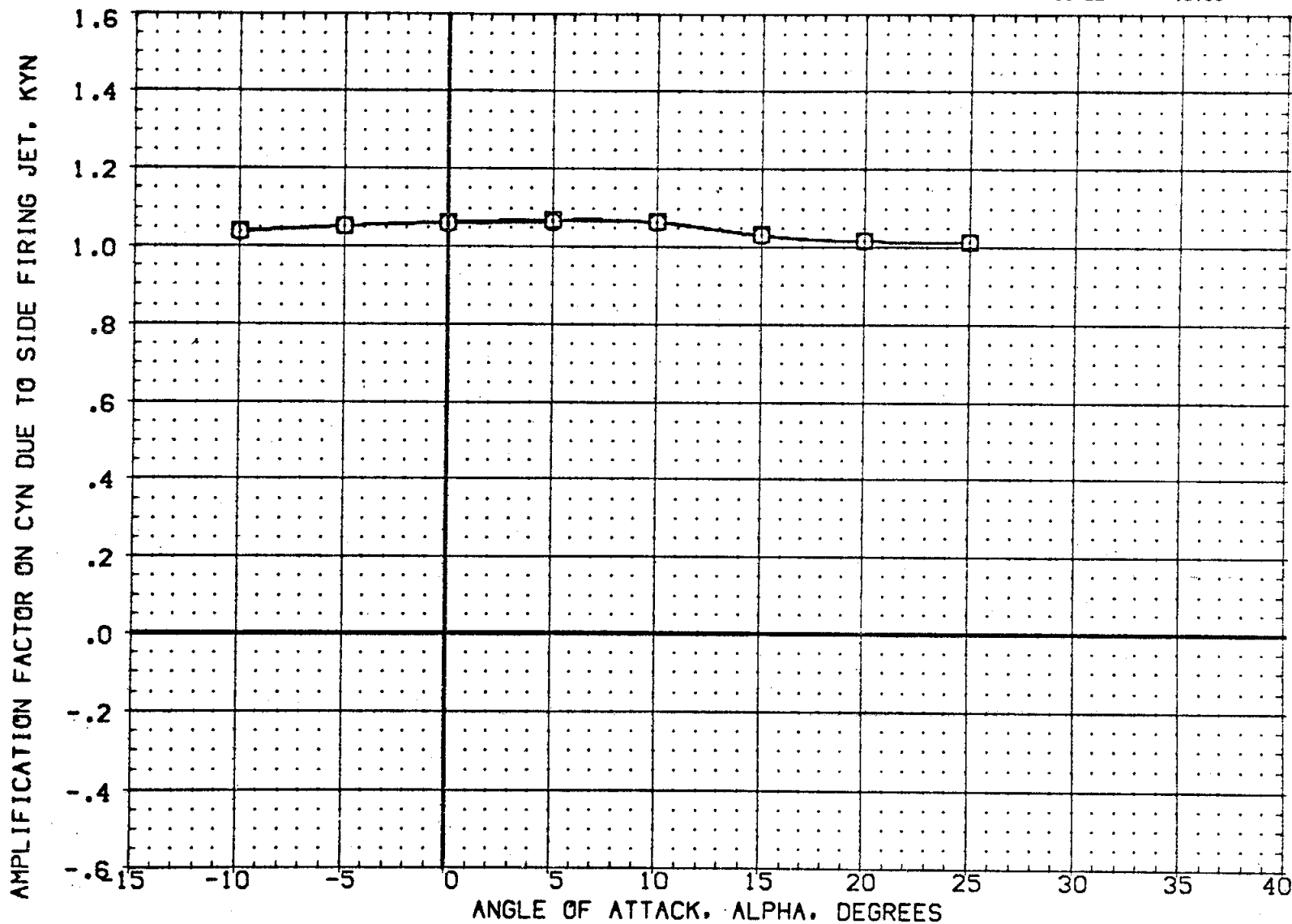


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRCSS	Q-SIM	BDFLAP	REFERENCE INFORMATION
(CH2030)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	-20.000	504.000	7.000	.000
(CH2021)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	.000	504.000	7.000	.000
						SREF 2690.0000 SQ.FT.
						LREF 474.8100 IN.
						BREF 936.6800 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

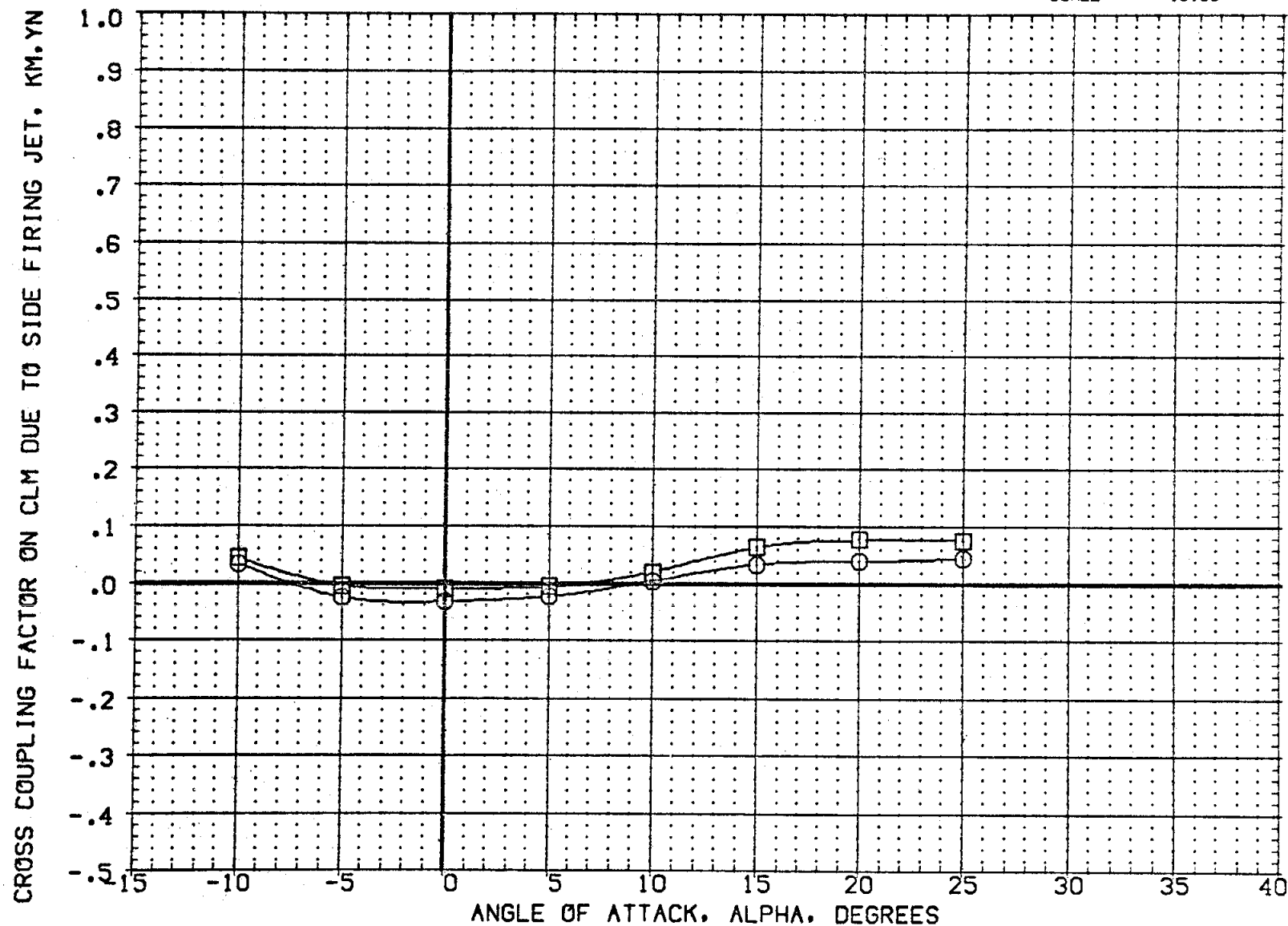


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH203) ○ DA105 CFHT109 MODEL 32-0 (0)N51  
 (CH202) □ DA105 CFHT109 MODEL 32-0 (0)N51

YAW  
 YAW

ELEVON PCRC5 Q-SIM BOFLAP  
 -20.000 504.000 7.000 .000  
 .000 504.000 7.000 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100

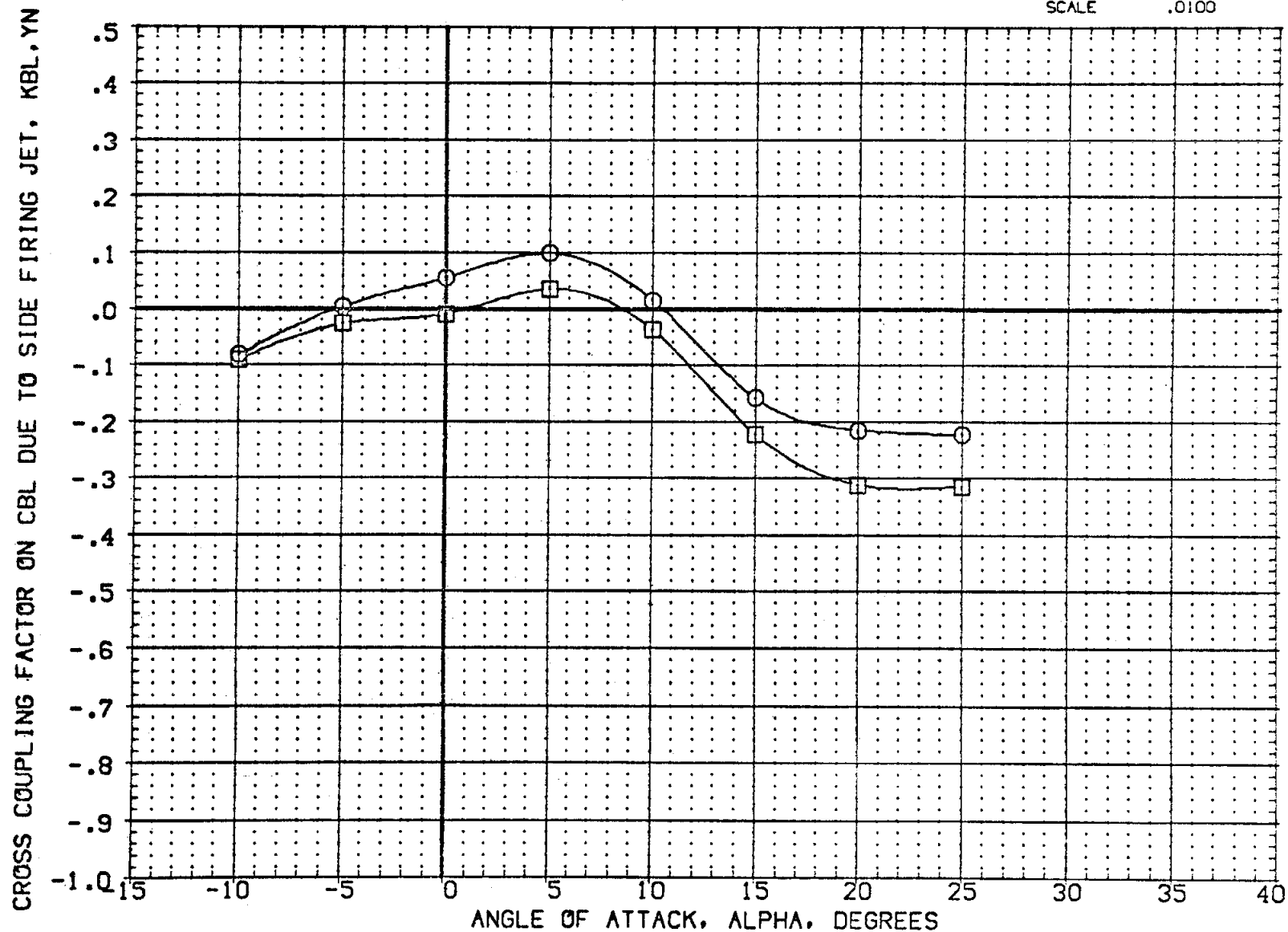


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2030) ○ 0A105 CFHT109 MODEL 32-0 (0)N51  
 (CH2021) □ 0A105 CFHT109 MODEL 32-0 (0)N51

YAW  
 YAW

ELEVON -20.000 504.000 7.000  
 .000 504.000 7.000

Q-SIM BOFLAP REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100

AMPLIFICATION FACTOR ON CY DUE TO SIDE FIRING JET, KY

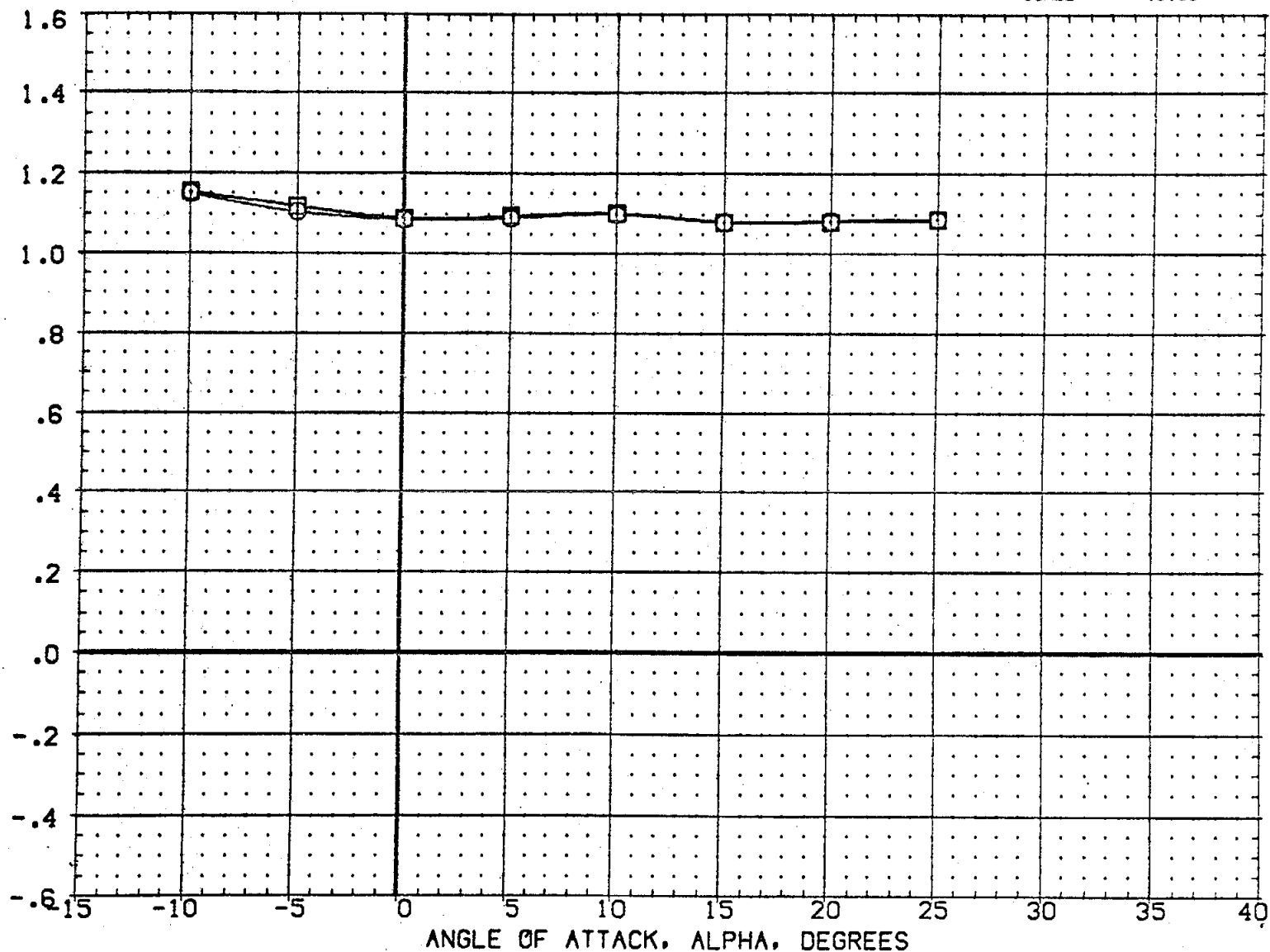


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2030)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51  
 (CH2021)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51

YAW  
 YAW

ELEVON PCRC5 Q-SIM BOFLAP  
 -20.000 504.000 7.000 .000  
 .000 504.000 7.000 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100

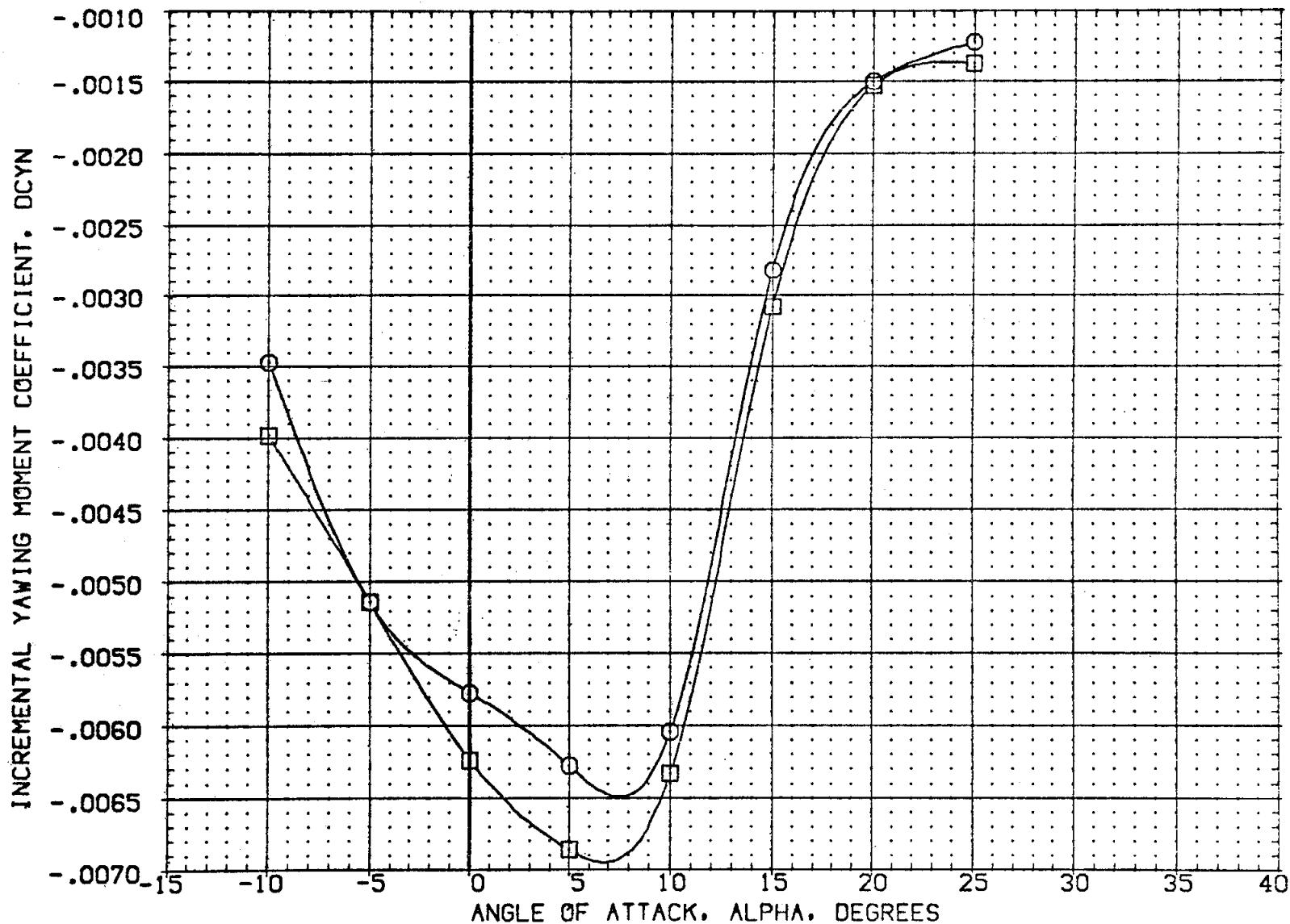


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(CH2030)	○ OA105 CFT105 MODEL 32-0 (0)N51	-20.000	504.000	7.000	.000	SREF	2690.0000	SQ.FT.
(CH2021)	□ OA105 CFT105 MODEL 32-0 (0)N51	.000	504.000	7.000	.000	LREF	474.8100	IN.
						BREF	936.6800	IN.
						XMRP	1076.6700	IN. XO
						YMRP	.0000	IN. YO
						ZMRP	375.0000	IN. ZO
						SCALE	.0100	

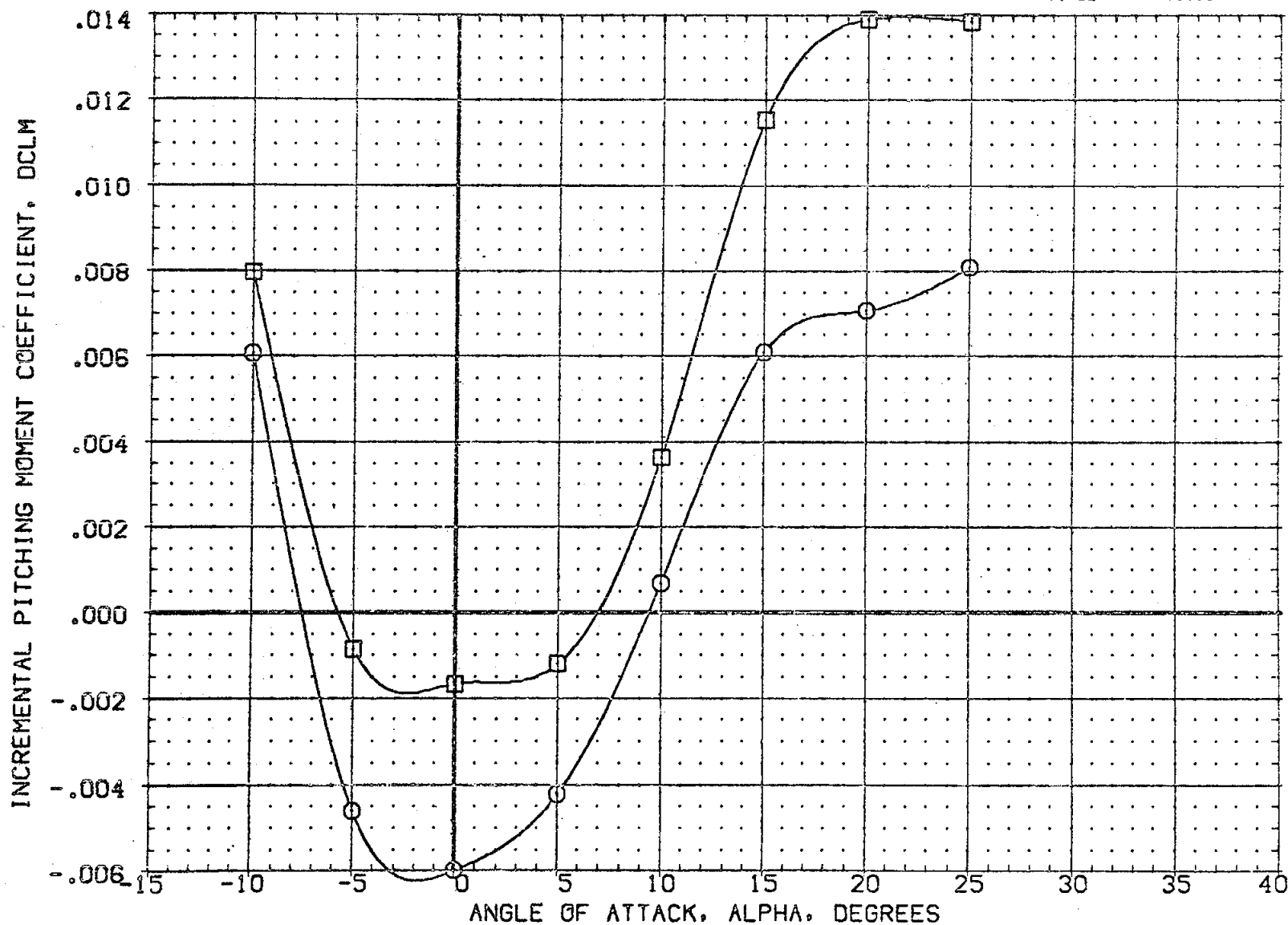


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(CH2030)	DA105 CFHT109 MODEL 32-0 (0)N51	-20.000	504.000	7.000	.000	SREF	2690.0000	SQ.FT.
(CH2021)	DA105 CFHT109 MODEL 32-0 (0)N51	.000	504.000	7.000	.000	LREF	474.8100	IN.
						BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

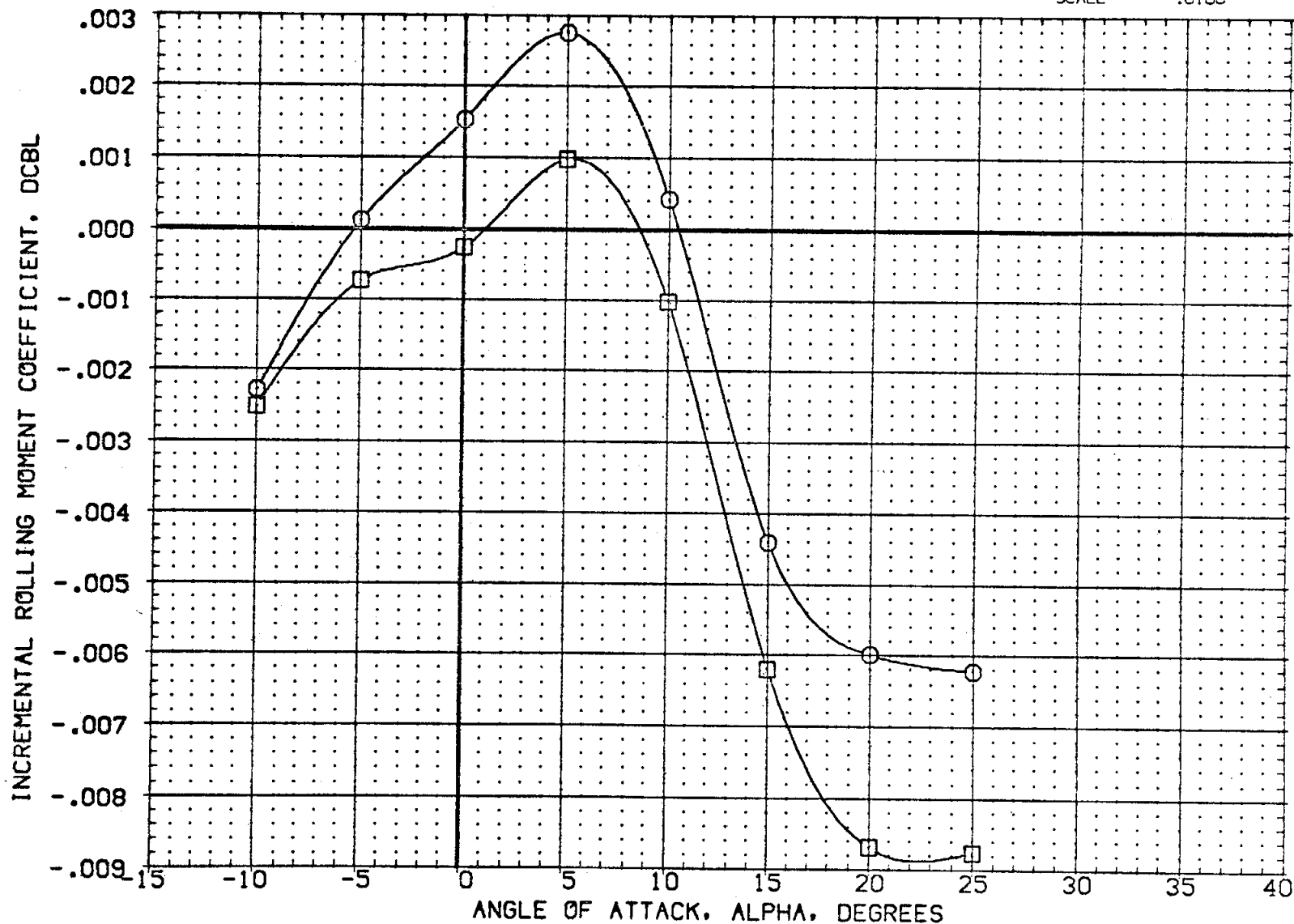


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2030)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51 YAW  
(CH2021)  $\circ$  0A105 CFHT109 MODEL 32-0 (0)N51 YAW

ELEVON PCRC5 Q-SIM BDFLAP  
-20.000 504.000 7.000 .000  
.000 504.000 7.000 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

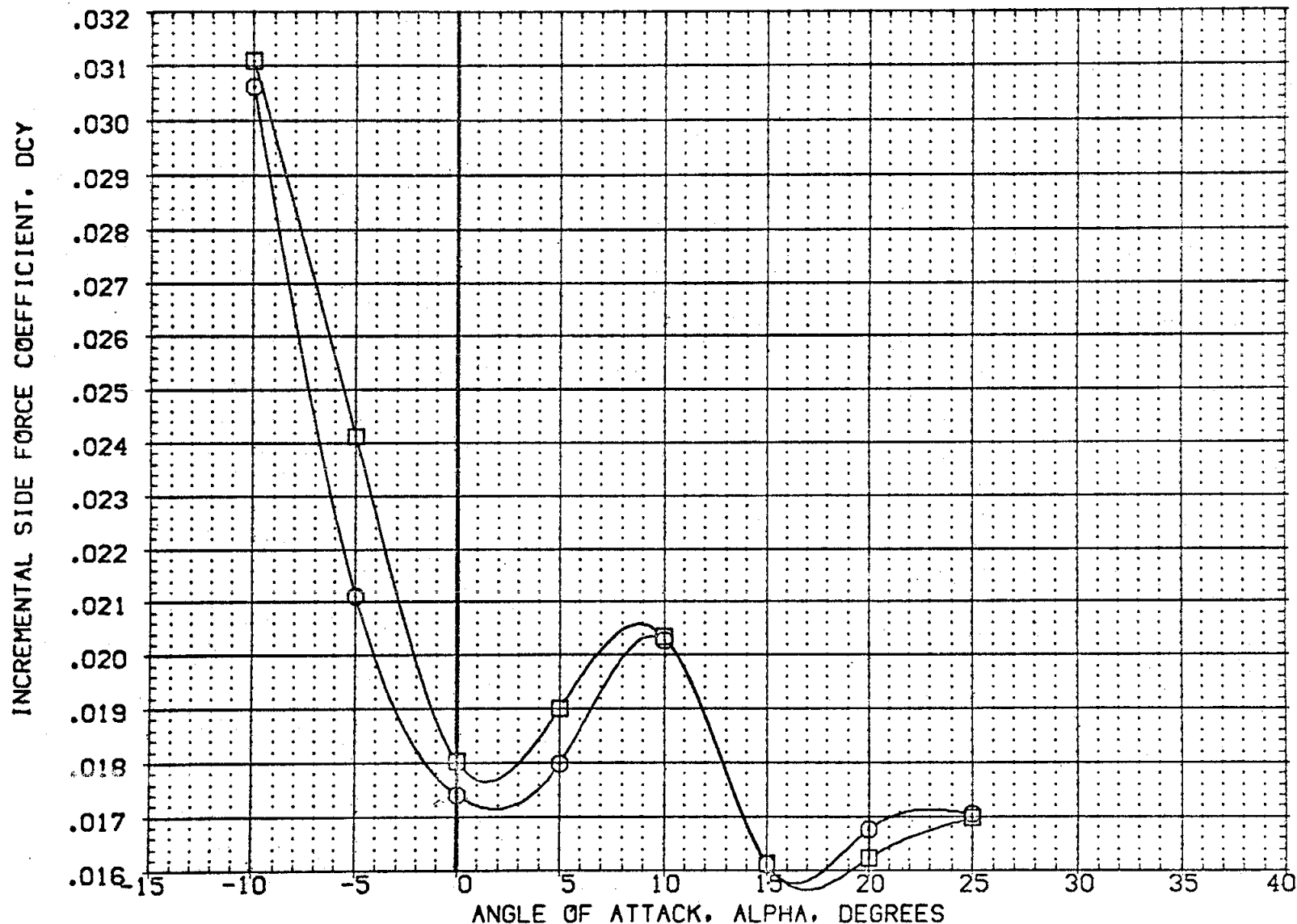


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BDFLAP	REFERENCE INFORMATION		
(ZH230N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	-20.000	504.000	7.000	SREF	2690.0000	SQ.FT.
(ZH221N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	.000	504.000	7.000	LREF	474.8100	IN.
(ZH206F)	0A105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-20.000	.000	.000	BREF	936.6800	IN.
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

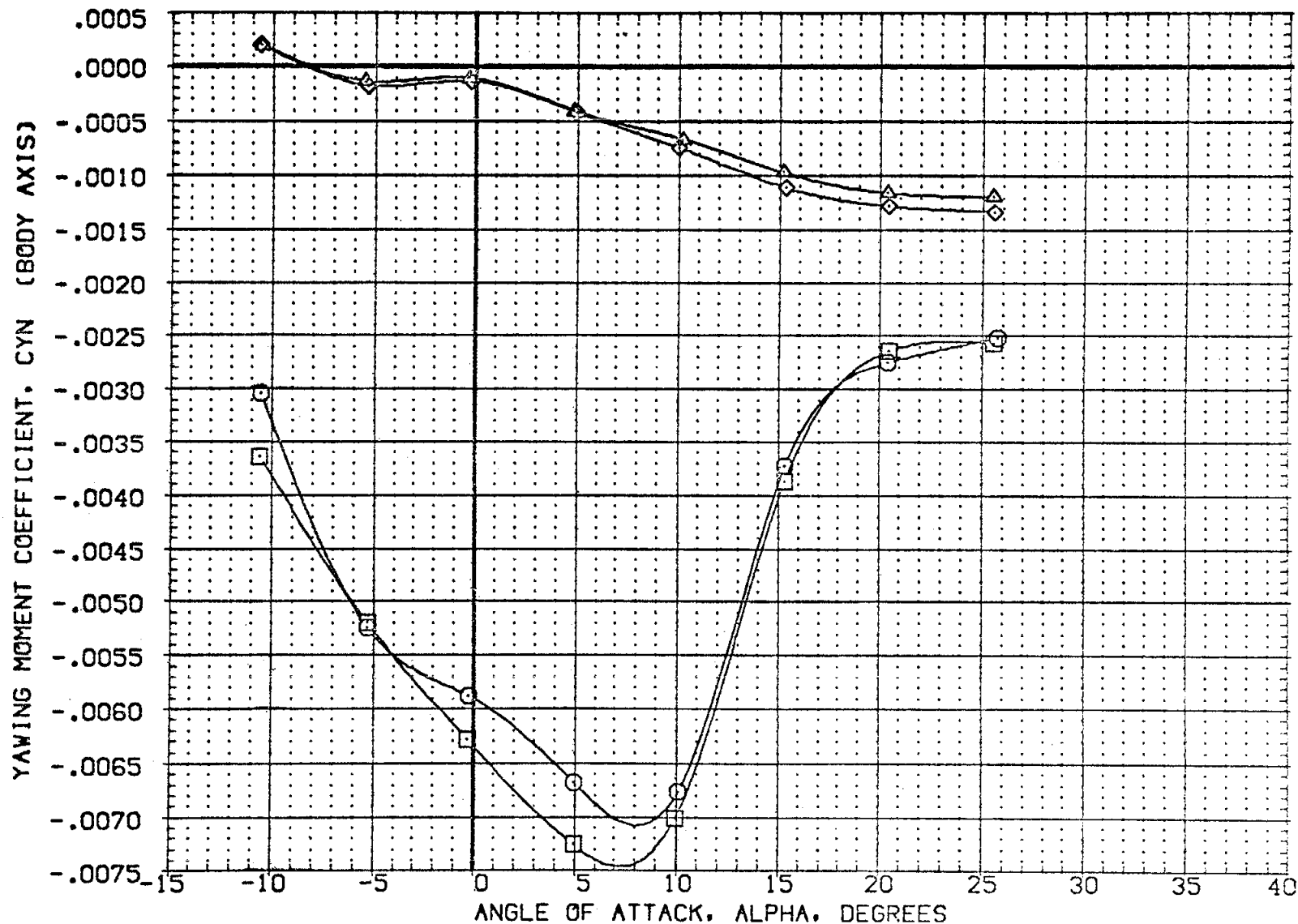


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(ZH230N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	-20.000	504.000	7.000	.000	SREF	2690.0000 SQ.FT.
(ZH221N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	.000	504.000	7.000	.000	LREF	474.8100 IN.
(ZH206F)	0A105 CFHT109 MODEL 32 0(0) N52	RCS OFF	-20.000	.000	.000	.000	BREF	936.6800 IN.
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	.000	.000	.000	.000	XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

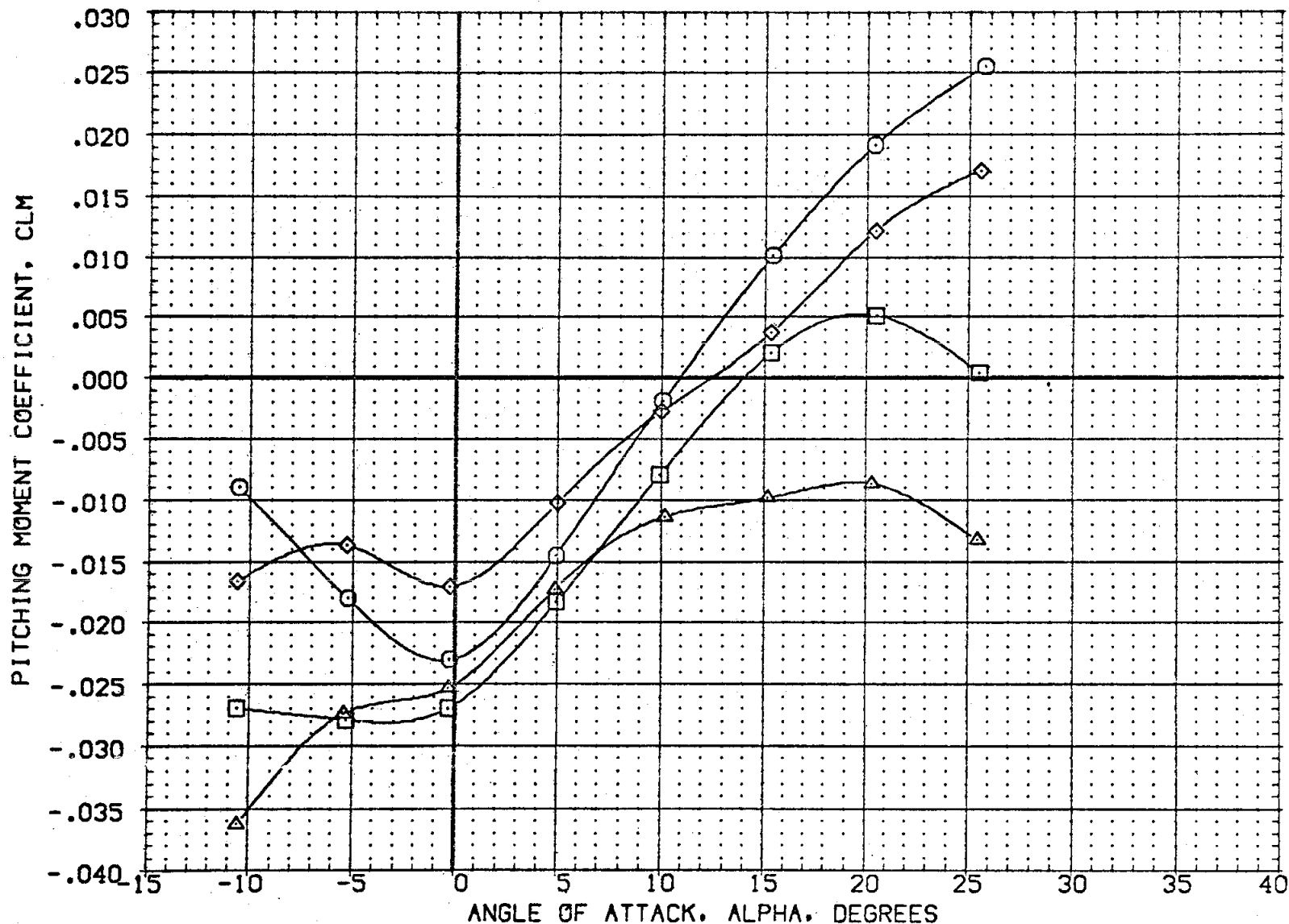


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BDFLAP	REFERENCE INFORMATION		
(ZH230N)	CA105 CFHT109 MODEL 32-0 (0)N51	YAW	-20.000	504.000	7.000	SREF	2690.0000	SQ.FT.
(ZH221N)	CA105 CFHT109 MODEL 32-0 (0)N51	YAW	.000	504.000	7.000	LREF	474.8100	IN.
(ZH206F)	CA105 CFHT109 MODEL 32 0(0) NN52	RCS OFF	-20.000	.000	.000	BREF	936.6800	IN.
(ZH203F)	CA105 CFHT109 MODEL 32 0(0) NN51	RCS OFF	.000	.000	.000	XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

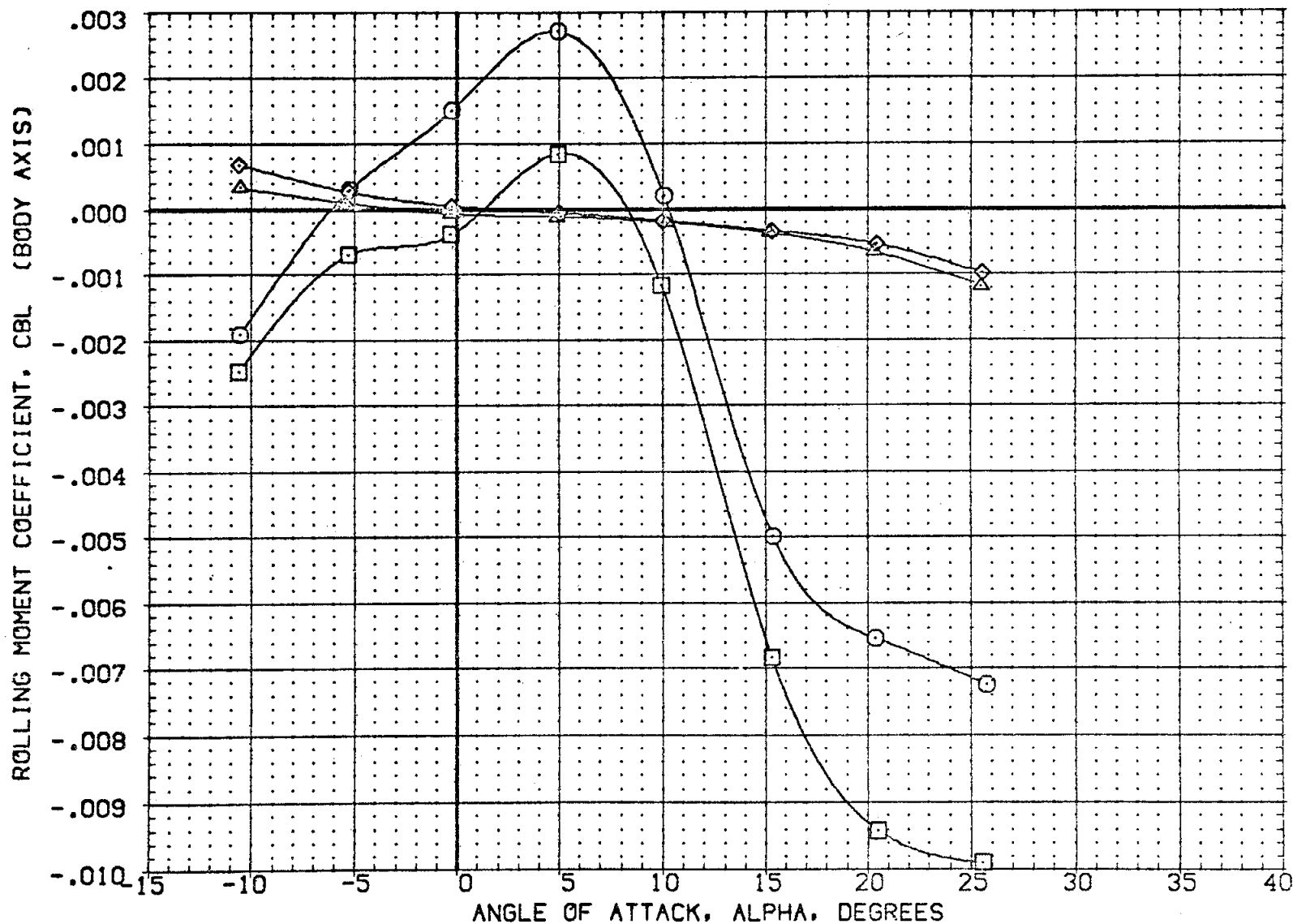


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(ZH230N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAV	-20.000	504.000	7.000	.000	SREF	2690.0000 SQ.FT.
(ZH221N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAV	.000	504.000	7.000	.000	LREF	474.8100 IN.
(ZH206F)	0A105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-20.000	.000	.000	.000	BREF	936.6800 IN.
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	.000	XMRF	1076.6700 IN. X0
							YMRF	.0000 IN. Y0
							ZMRF	375.0000 IN. Z0
							SCALE	.0100

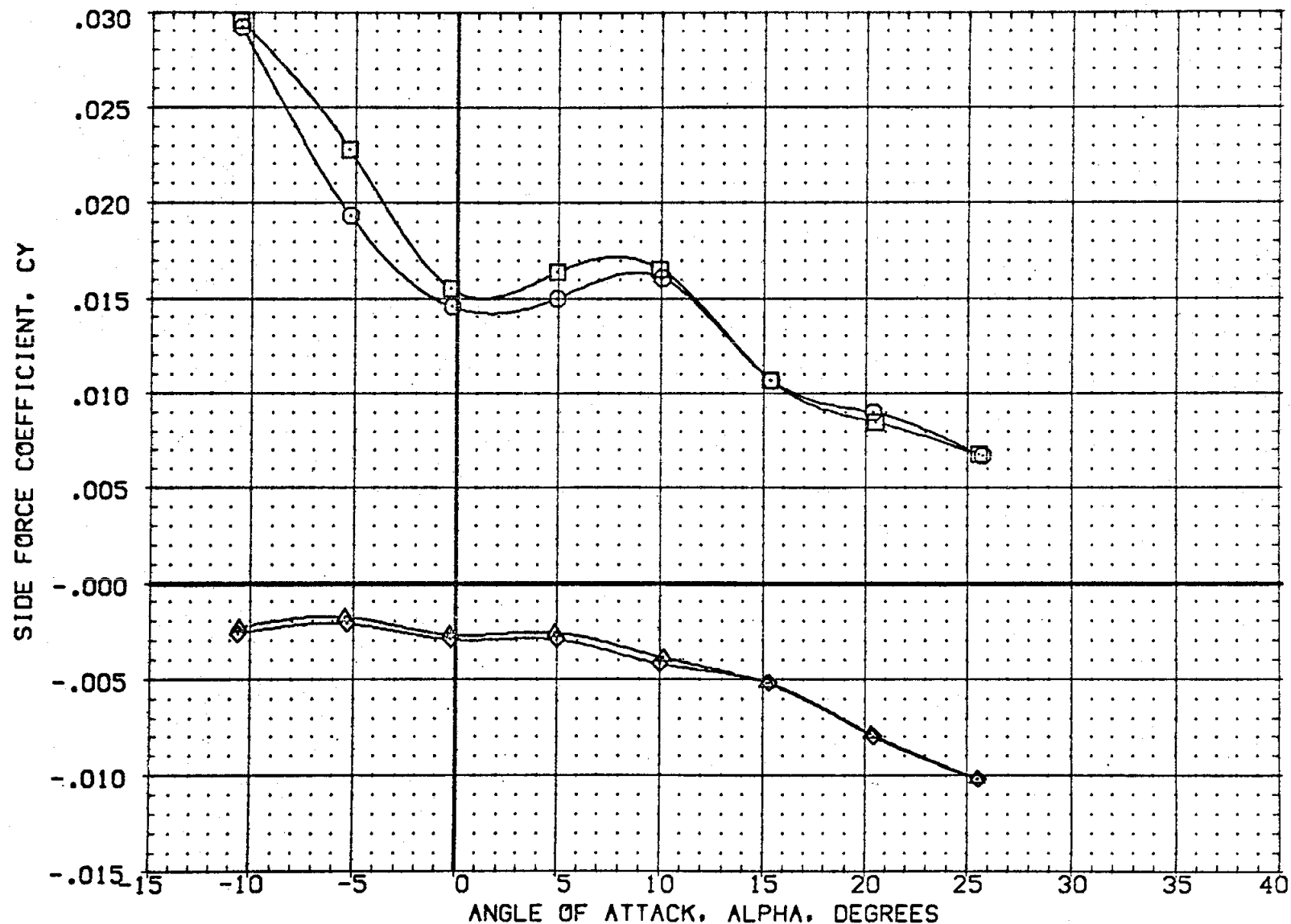


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (C01004) □ OA-85 CFHT101 MODEL 32-0 01NS1  
 (C01003) □ OA-85 CFHT101 MODEL 32-0 01NS1

YAW  
YAW

ELEVON	PCRC	Q-SIM	BOFLAP
-20.000	179.000	20.000	.000
15.000	179.000	20.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1076.6700	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0100	IN.

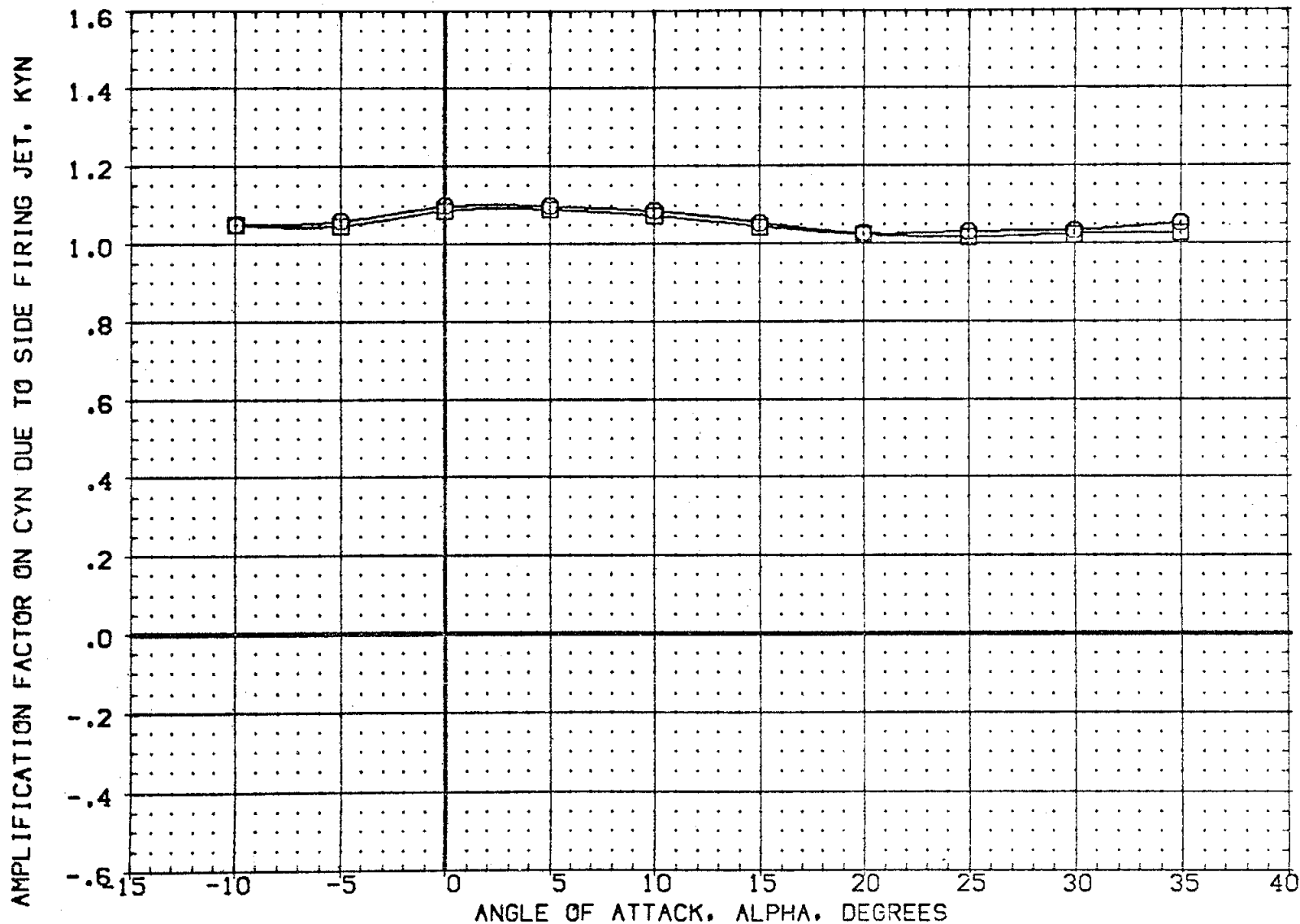


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BDFLAP	REFERENCE INFORMATION		
(C01004)	BA-85 CFHT101 MODEL 32-0 01N51	-20.000	179.000	20.000	.000	SREF	2690.0000	SQ.FT.
(C01003)	BA-85 CFHT101 MODEL 32-0 01N51	15.000	179.000	20.000	.000	LREF	474.8100	IN.
						BREF	936.6800	IN.
						XMRP	1076.6700	IN. XO
						YMRP	.0000	IN. YO
						ZMRP	375.0000	IN. ZO
						SCALE	.0100	IN.

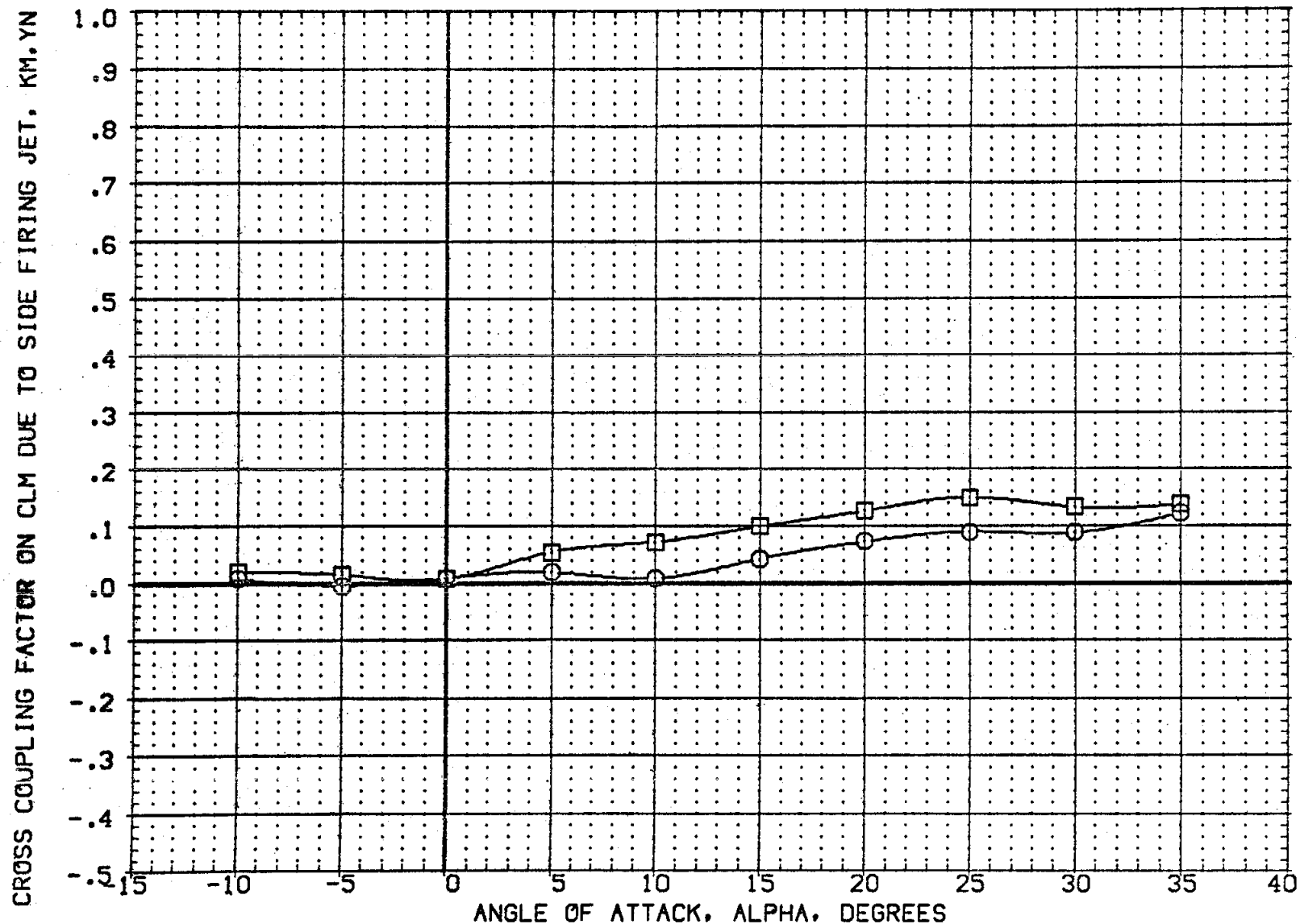




FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (CQ1004)  OA-85 CFHT101 MODEL 32-0 01N51  
 (CQ1003)  OA-85 CFHT101 MODEL 32-0 01N51

YAW  
YAW

ELEVON PCRC5 Q-SIM  
 -20.000 179.000 20.000  
 15.000 179.000 20.000

BDFLAP  
 .000  
 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100 IN.

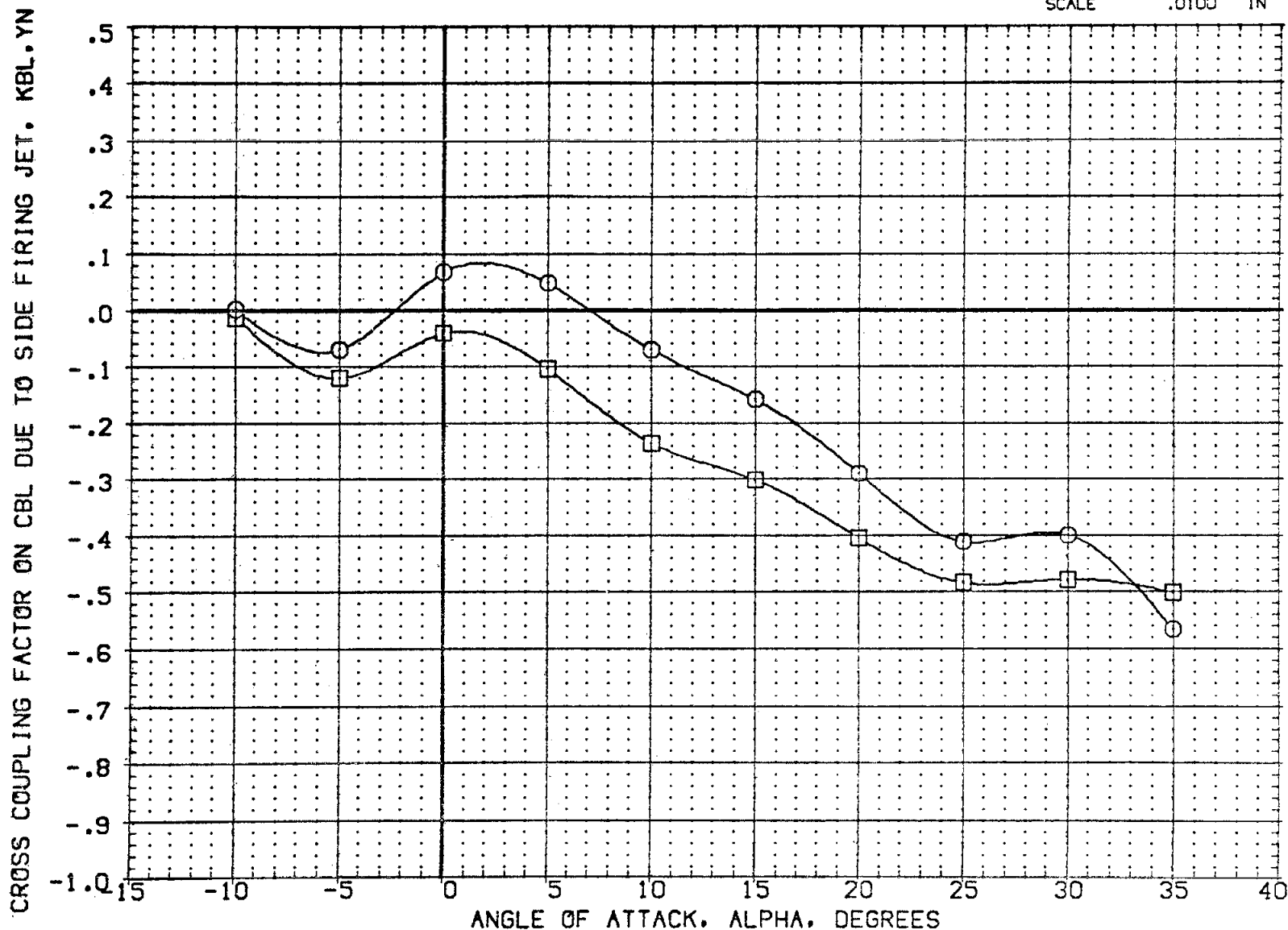


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(CQ1004)	OA-85 CFHT101 MODEL 32-0 01N51
(CQ1003)	OA-85 CFHT101 MODEL 32-0 01N51

YAW
YAW

ELEVON	PCPCS	Q-SIM	BDFLAP
-20.000	179.000	20.000	.000
15.000	179.000	20.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1076.6700	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0100	IN

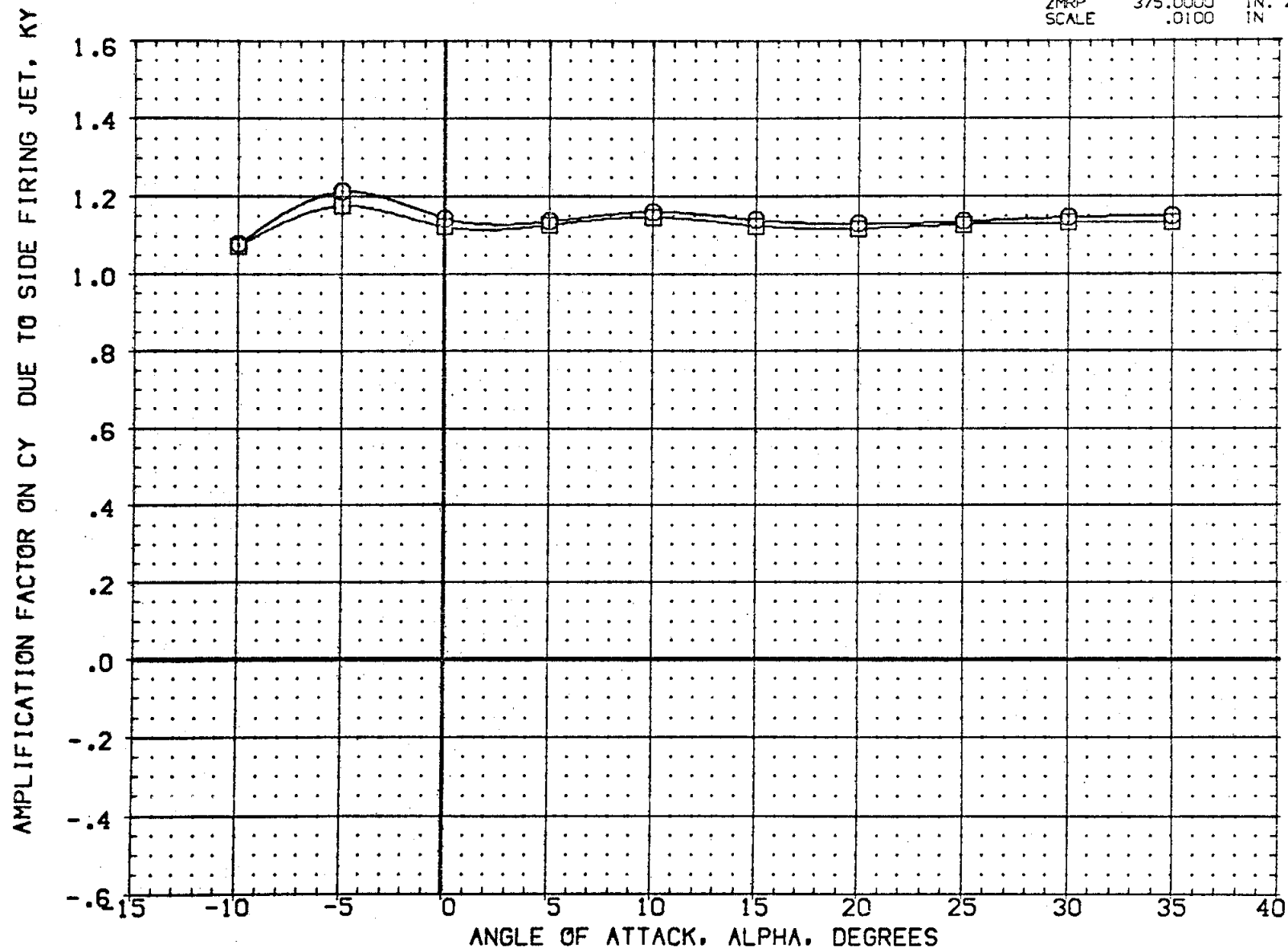


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (CQ1004) OA-85 CFHT101 MODEL 32-0 01N51  
 (CQ1003) OA-85 CFHT101 MODEL 32-0 01N51

YAW  
YAW

ELEVON PCRC5 Q-SIM BDFLAP  
 -20.000 179.000 20.000 .000  
 15.000 179.000 20.000 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. XC  
 YMRP .0000 IN. YC  
 ZMRP 375.0000 IN. ZC  
 SCALE .0100 IN

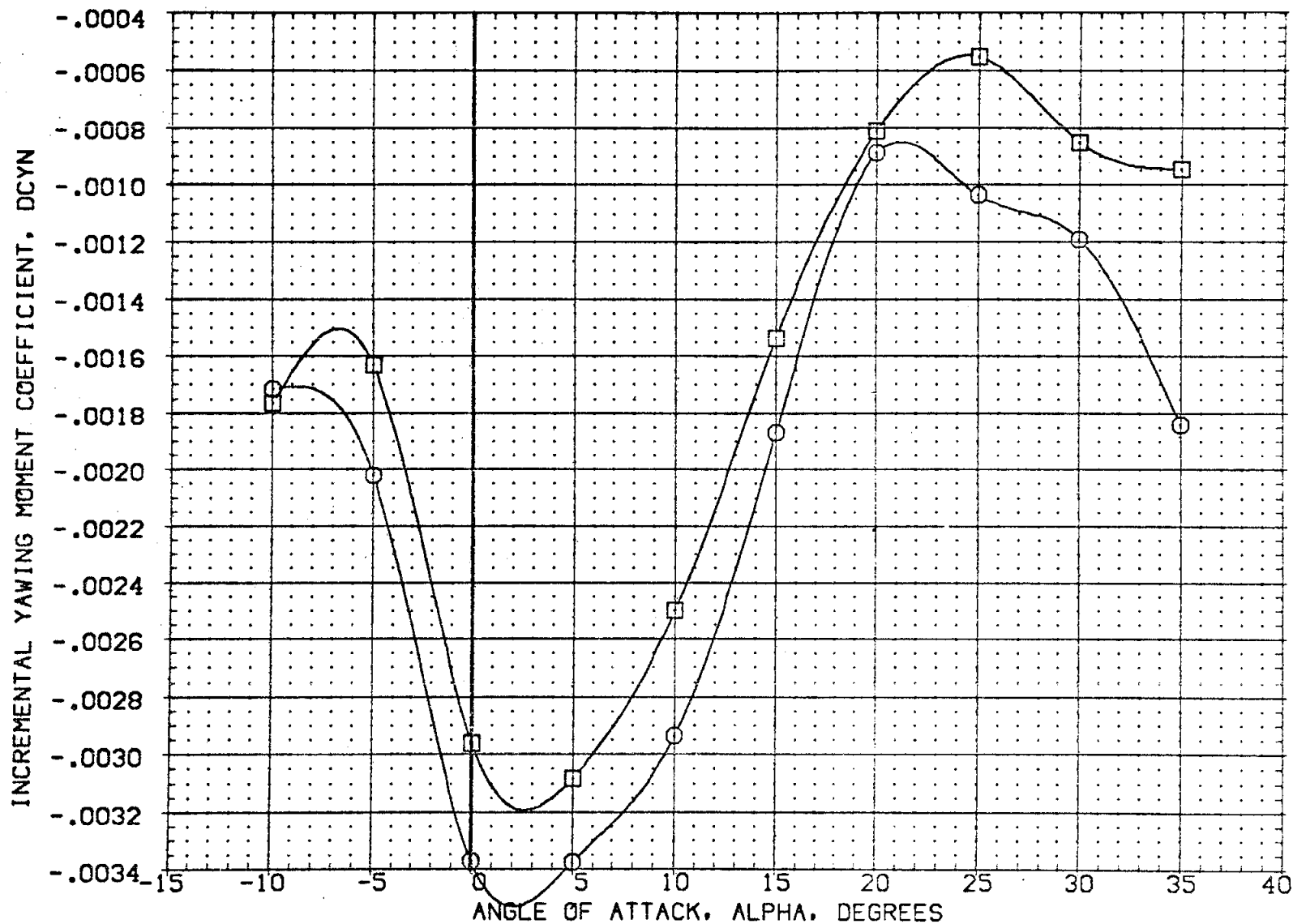


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (CQ1004) ○ OA-85 CFHT101 MODEL 32-0 01NS1  
 (CQ1003) □ OA-85 CFHT101 MODEL 32-0 01NS1

YAW  
 YAW

ELEVON PCRC5 Q-SIM BDFLAP  
 -20.000 179.000 20.000 .000  
 15.000 179.000 20.000 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100 IN

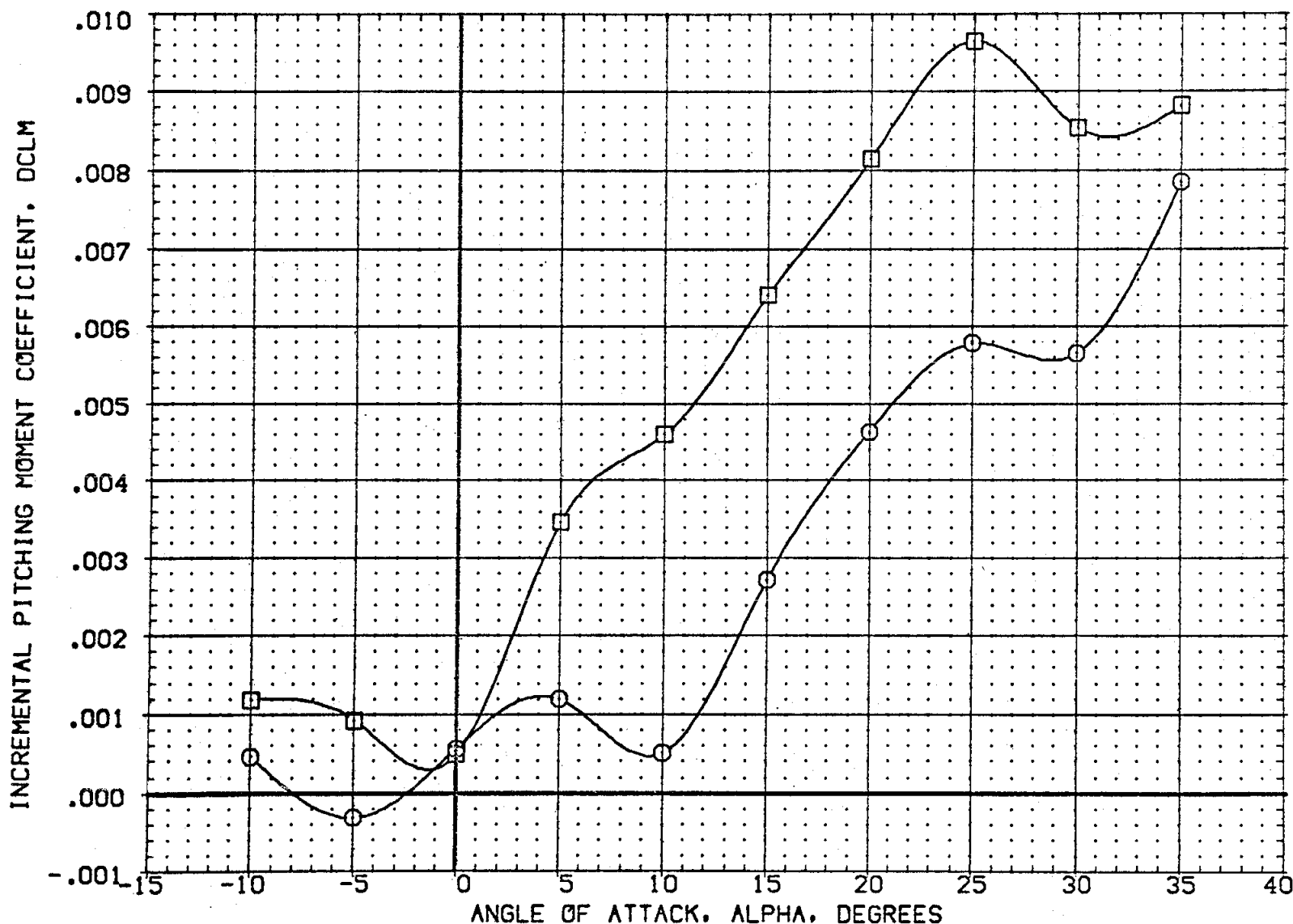




FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (C01004)  OA-85 CFHT101 MODEL 32-0 01NS1  
 (C01003)  OA-85 CFHT101 MODEL 32-0 01NS1

YAV  
YAV

ELEVON PCPCS Q-SIM BOFLAP  
 -20.000 179.000 20.000 .000  
 15.000 179.000 20.000 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100 IN

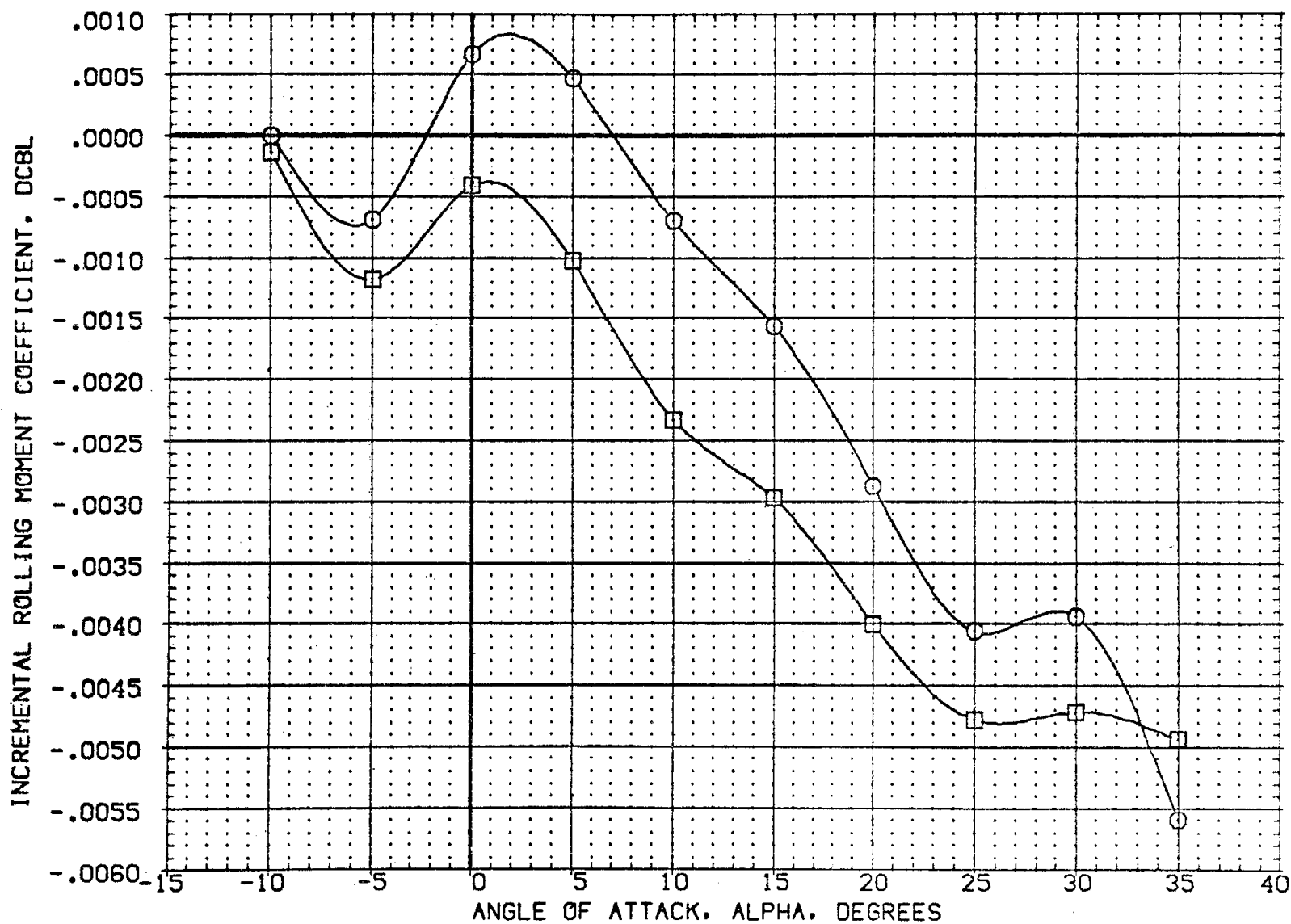


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(C01004)	OA-85 CFHT101 MODEL 32-0 01NS1
(C01003)	OA-85 CFHT101 MODEL 32-0 01NS1

ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION
-20.000	179.000	20.000	.000	SREF 2690.0000 SQ.FT.
15.000	179.000	20.000	.000	LREF 474.8100 IN.
				BREF 936.6800 IN.
				XMRP 1076.6700 IN. XO
				YMRP .0000 IN. YO
				ZMRP 375.0000 IN. ZO
				SCALE .0100 IN

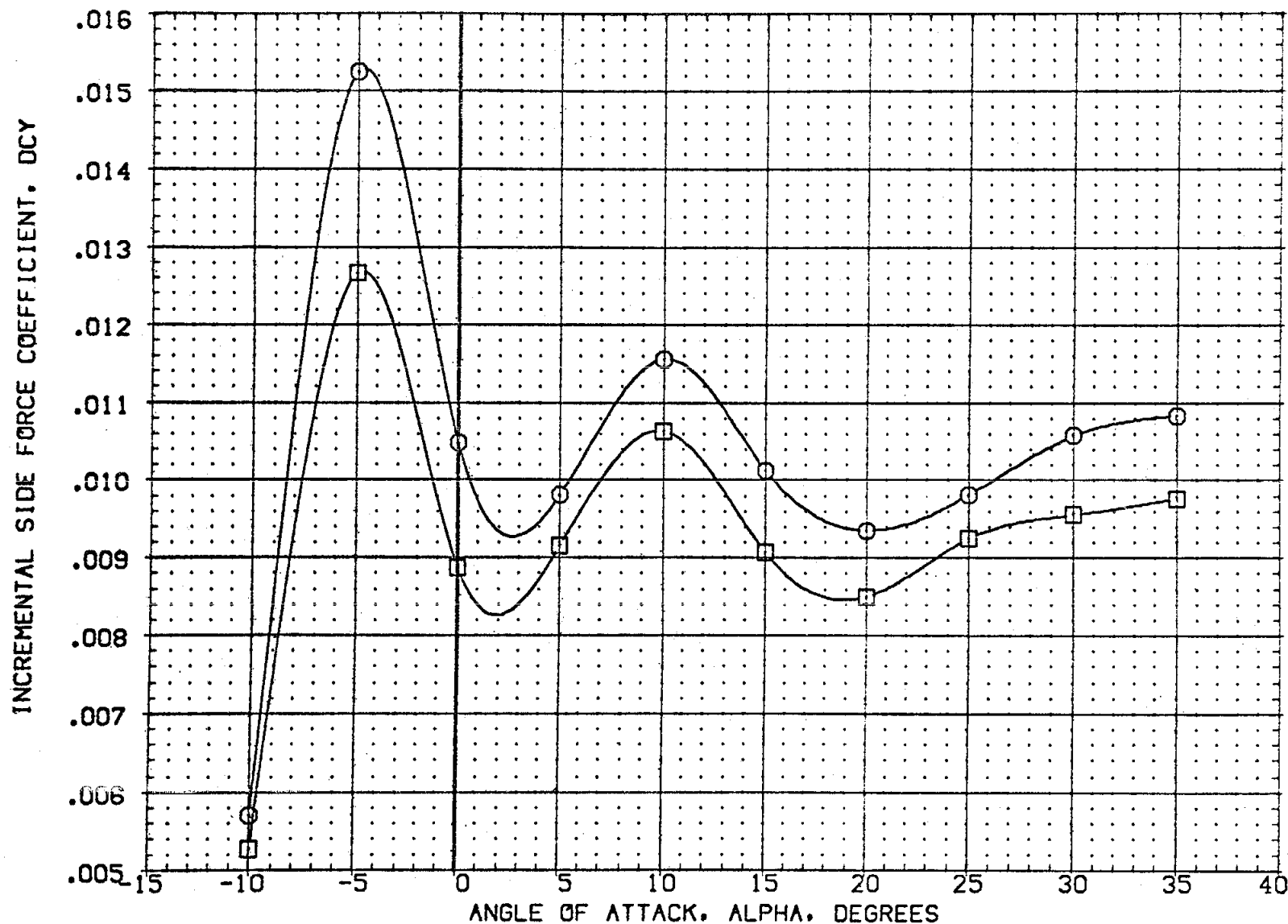


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(Z0104N)	OA-85 CFHT101 MODEL 32-0 01N51	-20.000	179.000	20.000	.000	SREF	2690.0000	50. FT.
(Z0103N)	OA-85 CFHT101 MODEL 32-0 01N51	15.000	179.000	20.000	.000	LREF	474.8100	IN.
(Z0102F)	OA-85 CFHT101 MODEL 32-0 01 N51	-20.000	.000	.000	.000	BREF	936.6800	IN.
(Z0101F)	OA-85 CFHT101 MODEL 32-0 01 N49 N50	15.000	.000	.000	.000	XMRP	1076.6700	IN. XO
						YMRP	.0000	IN. YO
						ZMRP	375.0000	IN. ZO
						SCALE	.0100	IN.

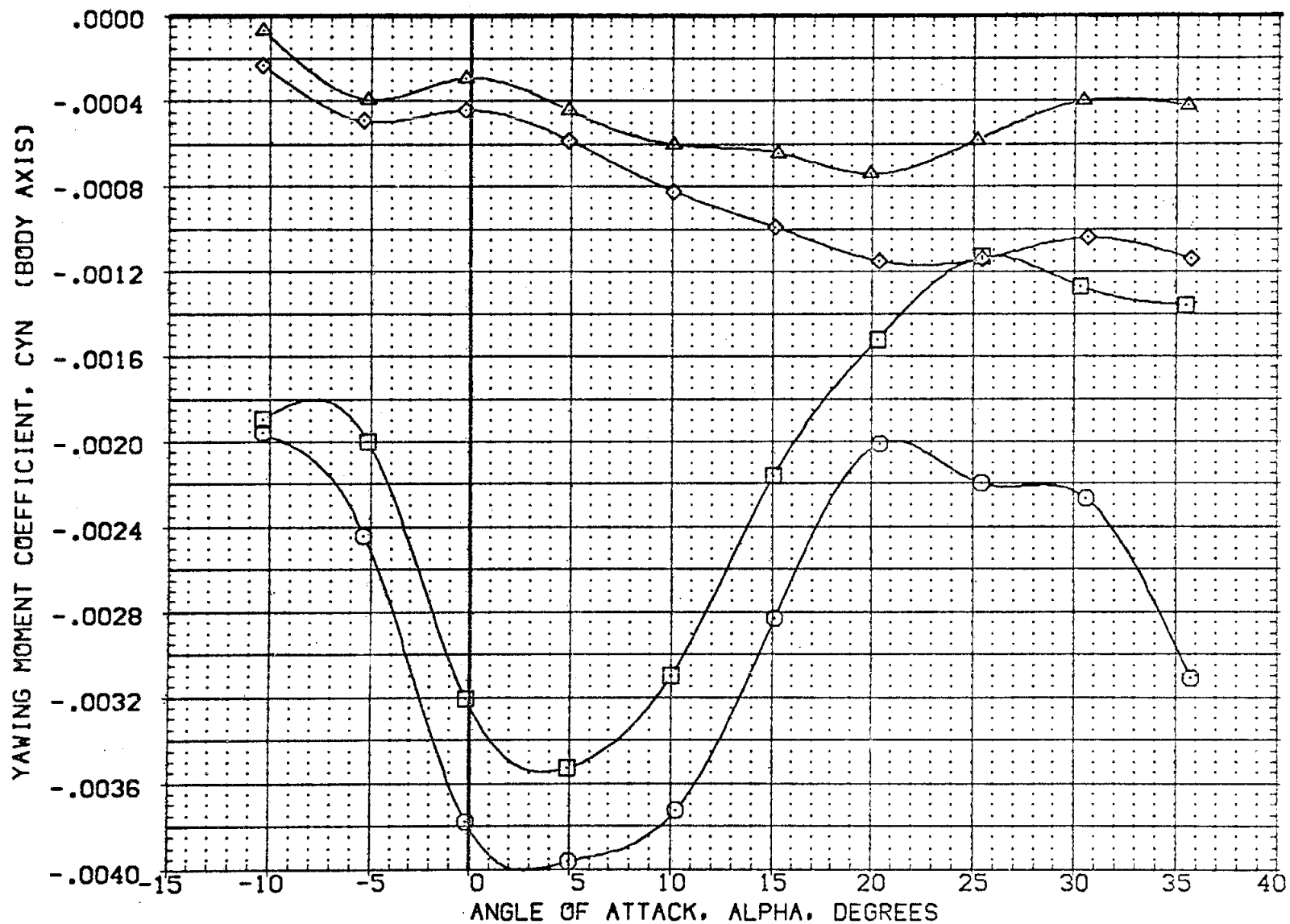


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BD FLAP	REFERENCE INFORMATION
(Z0104N)	○	OA-85 CFHT101 MODEL 32-0 01N51	-20.000	179.000	20.000	.000	SREF 2690.0000 SQ.FT.
(Z0103N)	□	OA-85 CFHT101 MODEL 32-0 01N51	15.000	179.000	20.000	.000	LREF 474.8100 IN.
(Z0102F)	◇	OA-85 CFHT101 MODEL 32-0 01 N51	-20.000	.000	.000	.000	BREF 936.6800 IN.
(Z0101F)	△	OA-85 CFHT101 MODEL 32-0 01 N49 N50	15.000	.000	.000	.000	XMRP 1076.6700 IN. XO
							YMRP .0000 IN. YO
							ZMRP 375.0000 IN. ZO
							SCALE .0100 IN

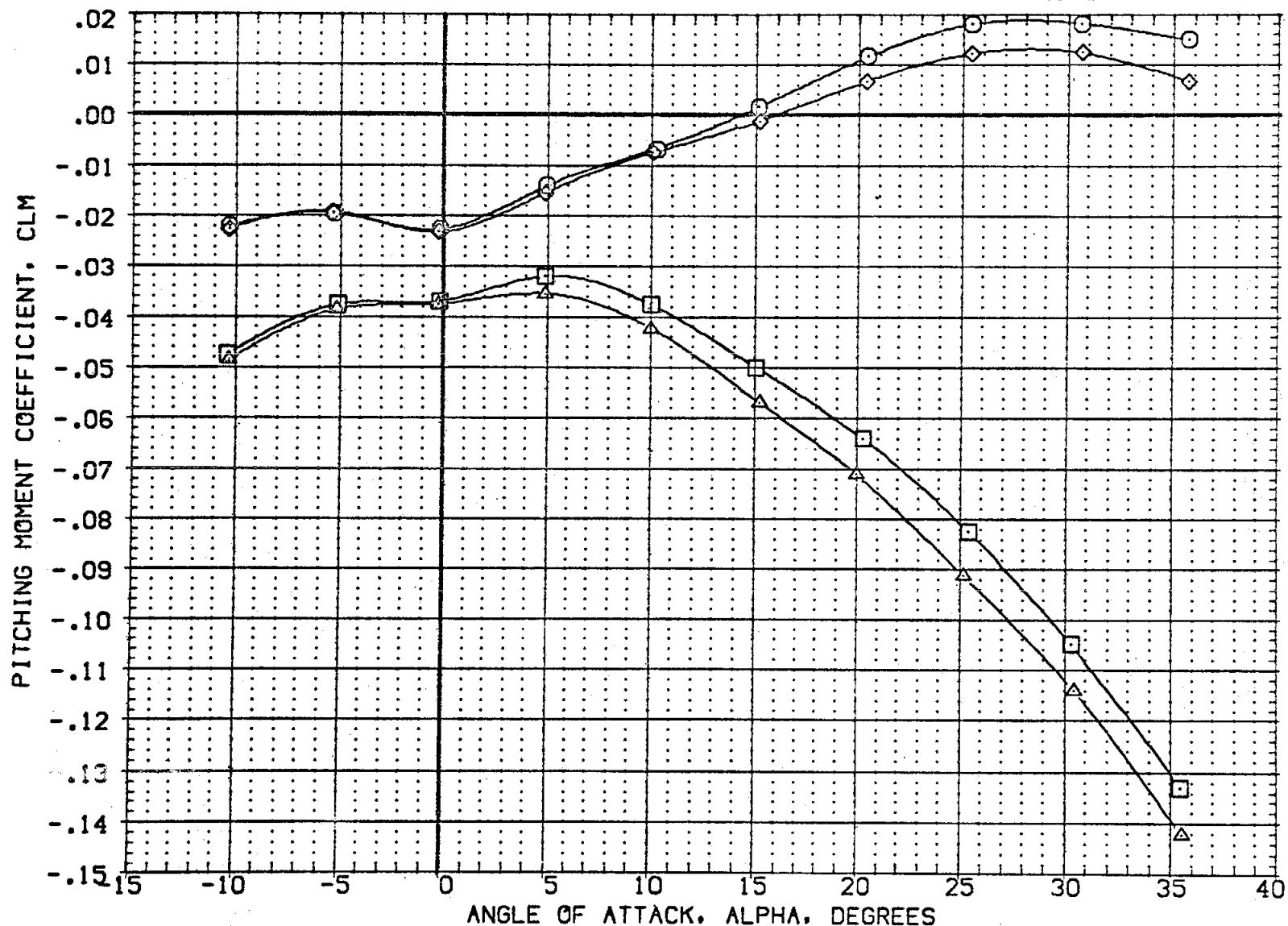


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRCS	0-SIM	BDFLAP	REFERENCE INFORMATION		
(Z0104N)	OA-85 CFHT101 MODEL 32-0 01NS1	YAW	-20.000	179.000	20.000	SREF	2690.0000	SQ.FT.
(Z0103N)	OA-85 CFHT101 MODEL 32-0 01NS1	YAW	15.000	179.000	20.000	LREF	474.8100	IN.
(Z0102F)	OA-85 CFHT101 MODEL 32-0 01 NS1	RCS OFF	-20.000	.000	.000	BREF	936.6800	IN.
(Z0101F)	OA-85 CFHT101 MODEL 32-0 01 N49 N50	RCS OFF	15.000	.000	.000	XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	IN.

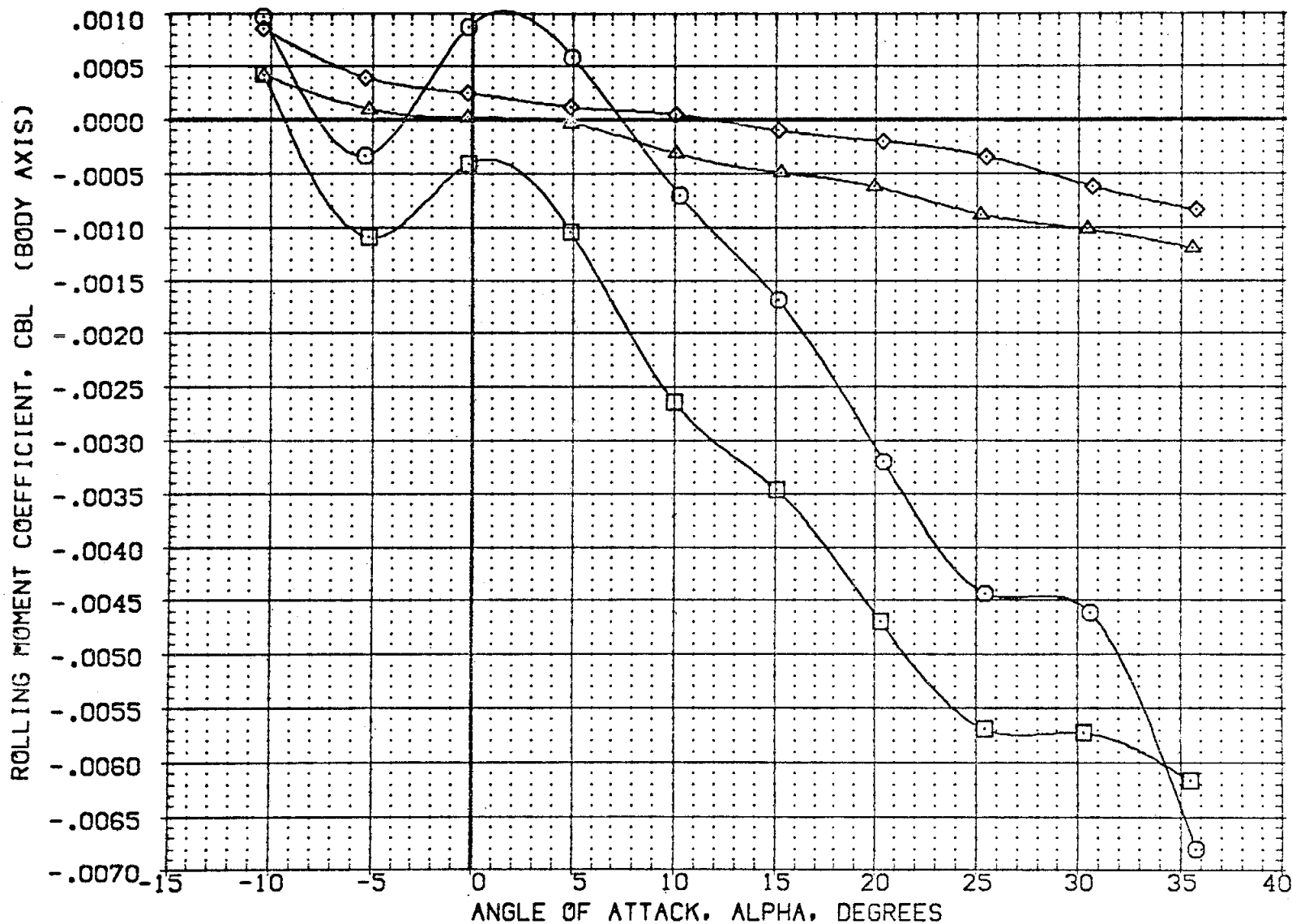


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION
(Z0104N)	OA-85 CFHT101 MODEL 32-0 01N51 YAW	-20.000	179.000	20.000	.000	SREF 2690.0000 SQ.FT.
(Z0103N)	OA-85 CFHT101 MODEL 32-0 01N51 YAW	15.000	179.000	20.000	.000	LREF 474.8100 IN.
(Z0102F)	OA-85 CFHT101 MODEL 32-0 01 N51 RCS OFF	-20.000	.000	.000	.000	BREF 936.6800 IN.
(Z0101F)	OA-85 CFHT101 MODEL 32-0 01 N49 N50 RCS OFF	15.000	.000	.000	.000	XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100 IN.

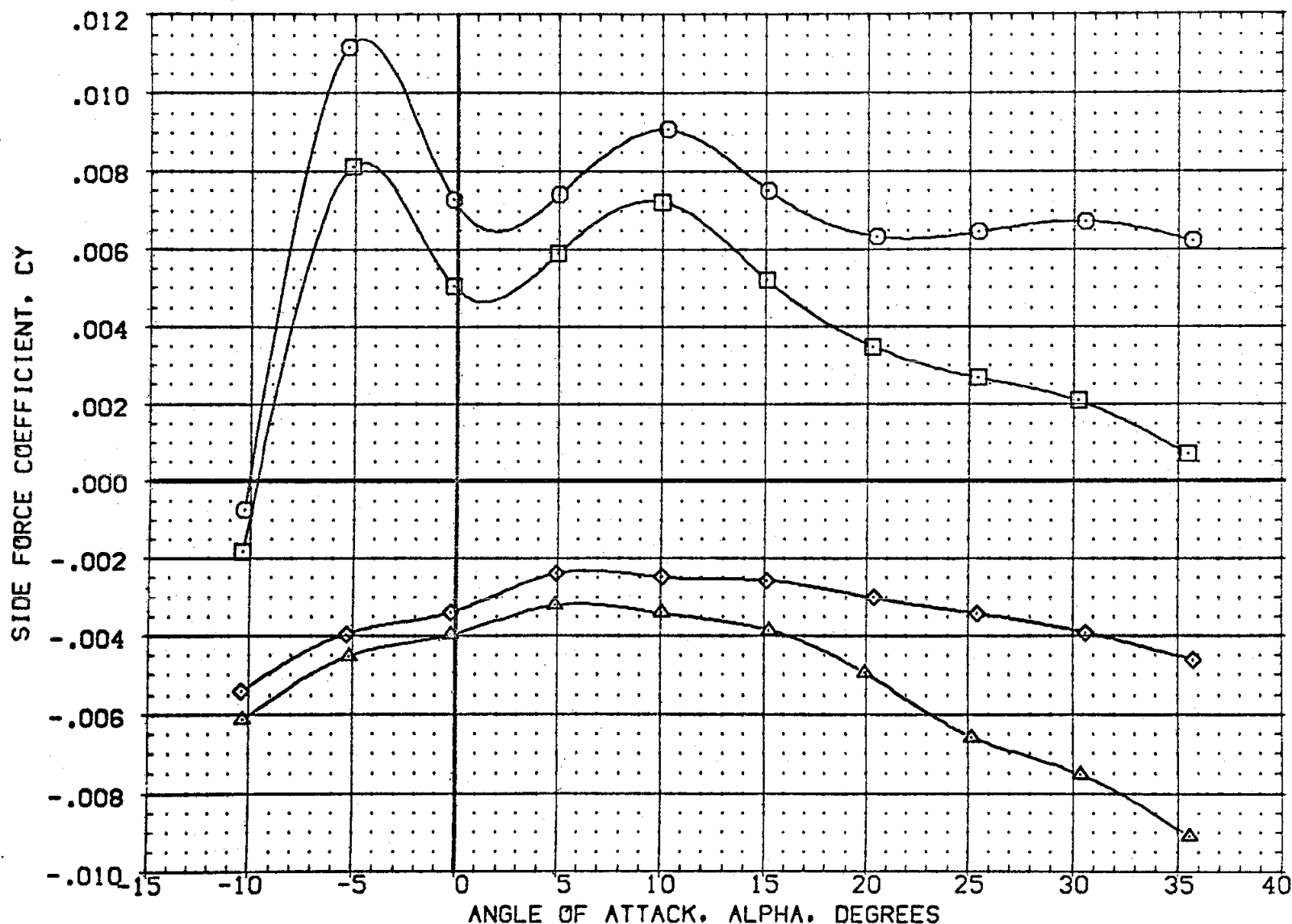


FIG 12 EFFECT OF ELEVON DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2020)	OA105 CFHT109 MODEL 32-0 (0)N51	-14.250	504.000	.000	7.000	SREF	2690.0000	50. FT.
(CH2021)	OA105 CFHT109 MODEL 32-0 (0)N51	.000	504.000	.000	7.000	LREF	474.8100	IN.
(CH2003)	OA105 CFHT109 MODEL 32-0 (0)N51	13.750	504.000	.000	7.000	BREF	936.6900	IN.
						XMRP	1076.6700	IN. XO
						YMRP	.0000	IN. YO
						ZMRP	375.0000	IN. ZO
						SCALE	.0100	

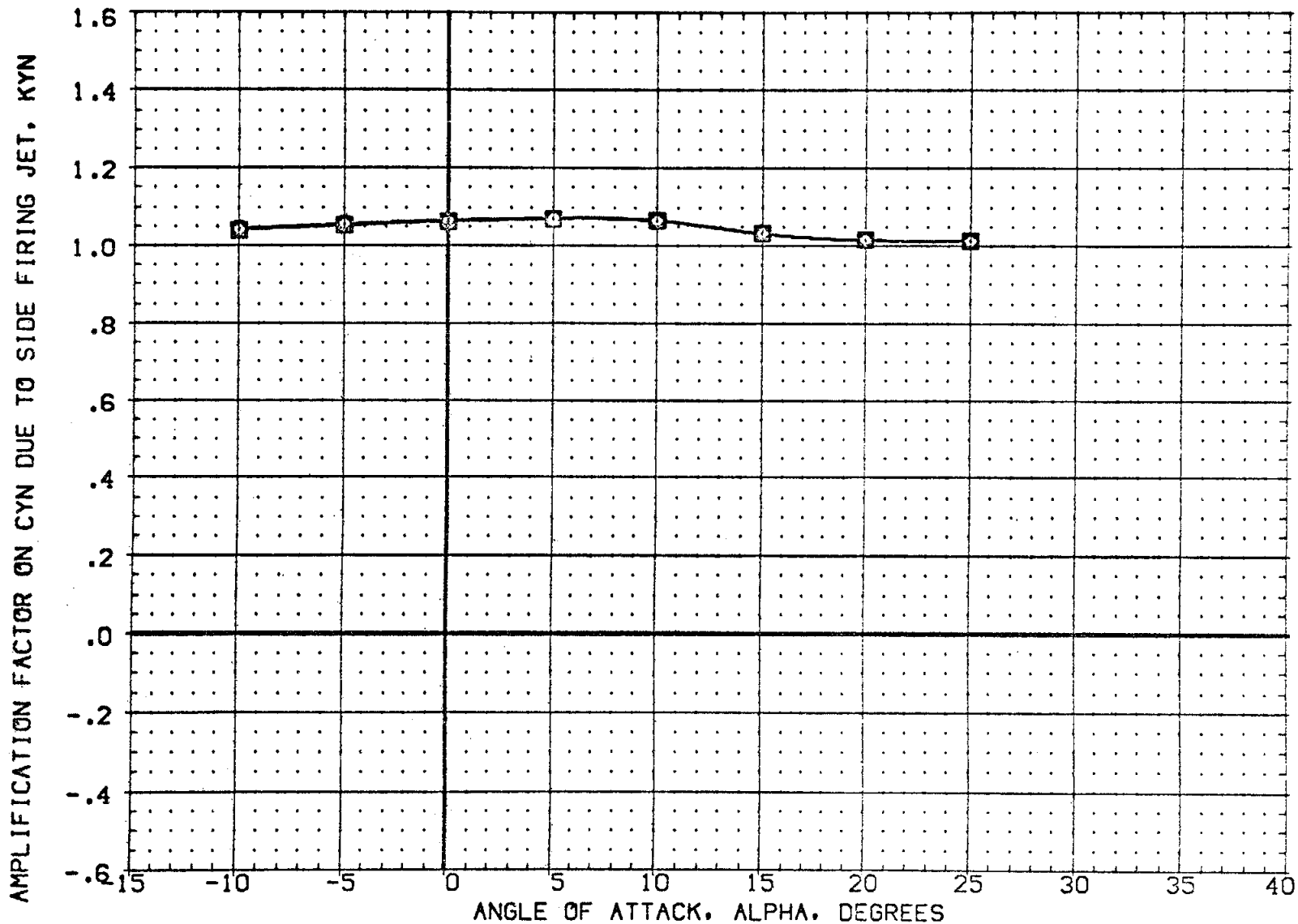


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION		BDFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2020)	0A105 CFHT109 MODEL 32-0 (0)NS1	YAW	-14.250	504.000	.000	7.000	SREF	2690.0000	SQ.FT.
(CH2021)	0A105 CFHT109 MODEL 32-0 (0)NS1	YAW	.000	504.000	.000	7.000	LREF	474.8100	IN.
(CH2003)	0A105 CFHT109 MODEL 32-0 (0)NS1	YAW	13.750	504.000	.000	7.000	BREF	936.6800	IN.
							XMRP	1076.6700	IN. XO
							YMRP	.0000	IN. YO
							ZMRP	375.0000	IN. ZO
							SCALE	.0100	

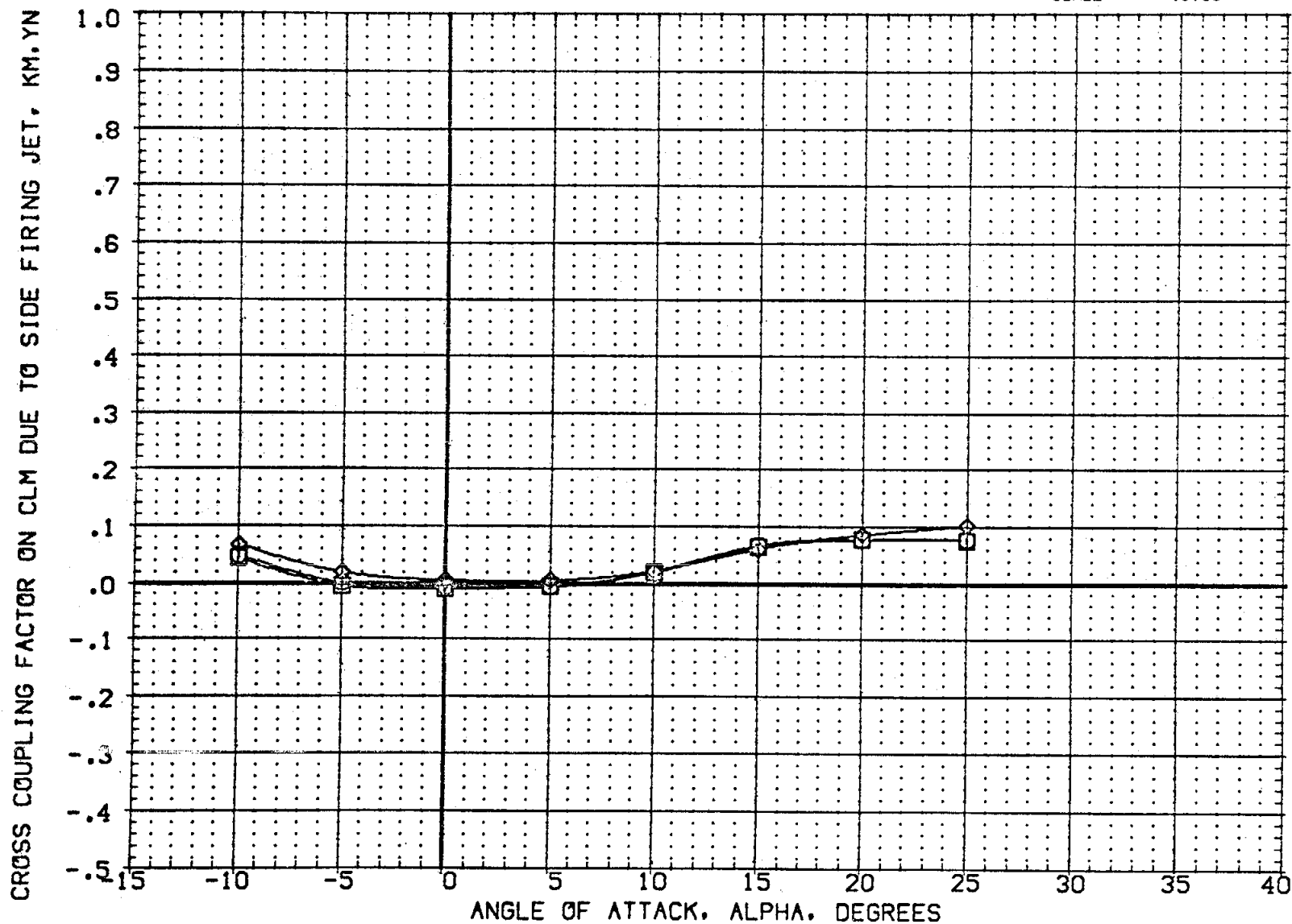


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION		BDFLAP	PCPCS	ELEVON	O-SIM	REFERENCE INFORMATION		
(CH2020)	0A105 CFHT109 MODEL 32-0 (0)N51	YAV	-14.250	504.000	.000	7.000	SREF	2690.0000	SQ.FT.
(CH2021)	0A105 CFHT109 MODEL 32-0 (0)N51	YAV	.000	504.000	.000	7.000	LREF	474.8100	IN.
(CH2003)	0A105 CFHT109 MODEL 32-0 (0)N51	YAV	13.750	504.000	.000	7.000	BREF	936.6800	IN.
							XMRP	1076.6700	IN. X0
							YMRP	.0000	IN. Y0
							ZMRP	375.0000	IN. Z0
							SCALE	.0100	

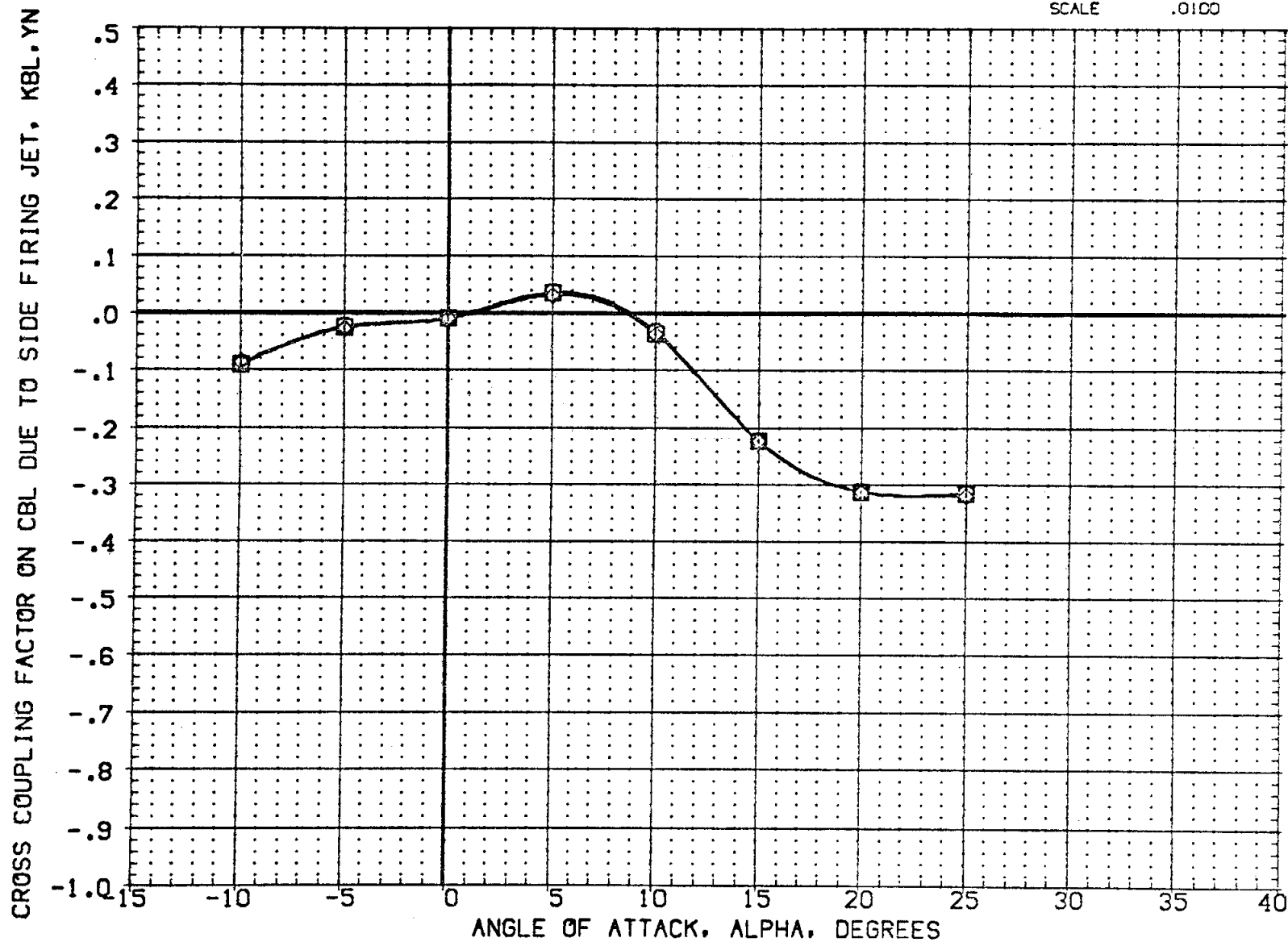


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION		BDFLAP	PCPCS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2020)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	-14.250	504.000	.000	7.000	SREF	2690.0000	SQ.FT.
(CH2021)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	.000	504.000	.000	7.000	LREF	474.8100	IN.
(CH2003)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	13.750	504.000	.000	7.000	BREF	936.6800	IN.
							XMRP	1076.6700	IN. X0
							YMRP	.0000	IN. Y0
							ZMRP	375.0000	IN. Z0
							SCALE	.0100	

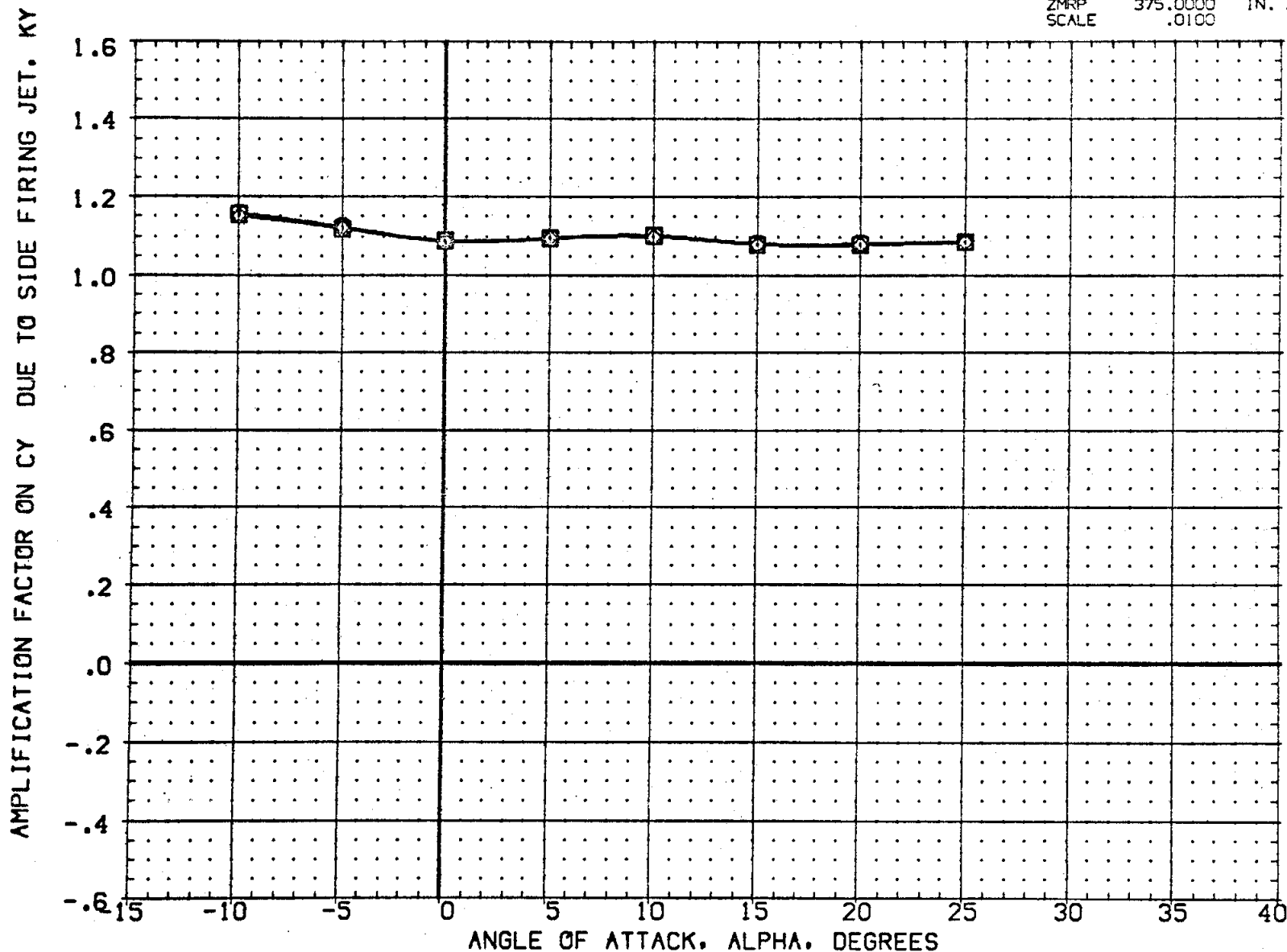


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2020)	□ OA105 CFHT109 MODEL 32-0 (0)N51	-14.250	504.000	.000	7.000	SREF	2690.0000	50. FT.
(CH2021)	○ OA105 CFHT109 MODEL 32-0 (0)N51	.000	504.000	.000	7.000	LREF	474.8100	IN.
(CH2003)	◇ OA105 CFHT109 MODEL 32-0 (0)N51	13.750	504.000	.000	7.000	BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

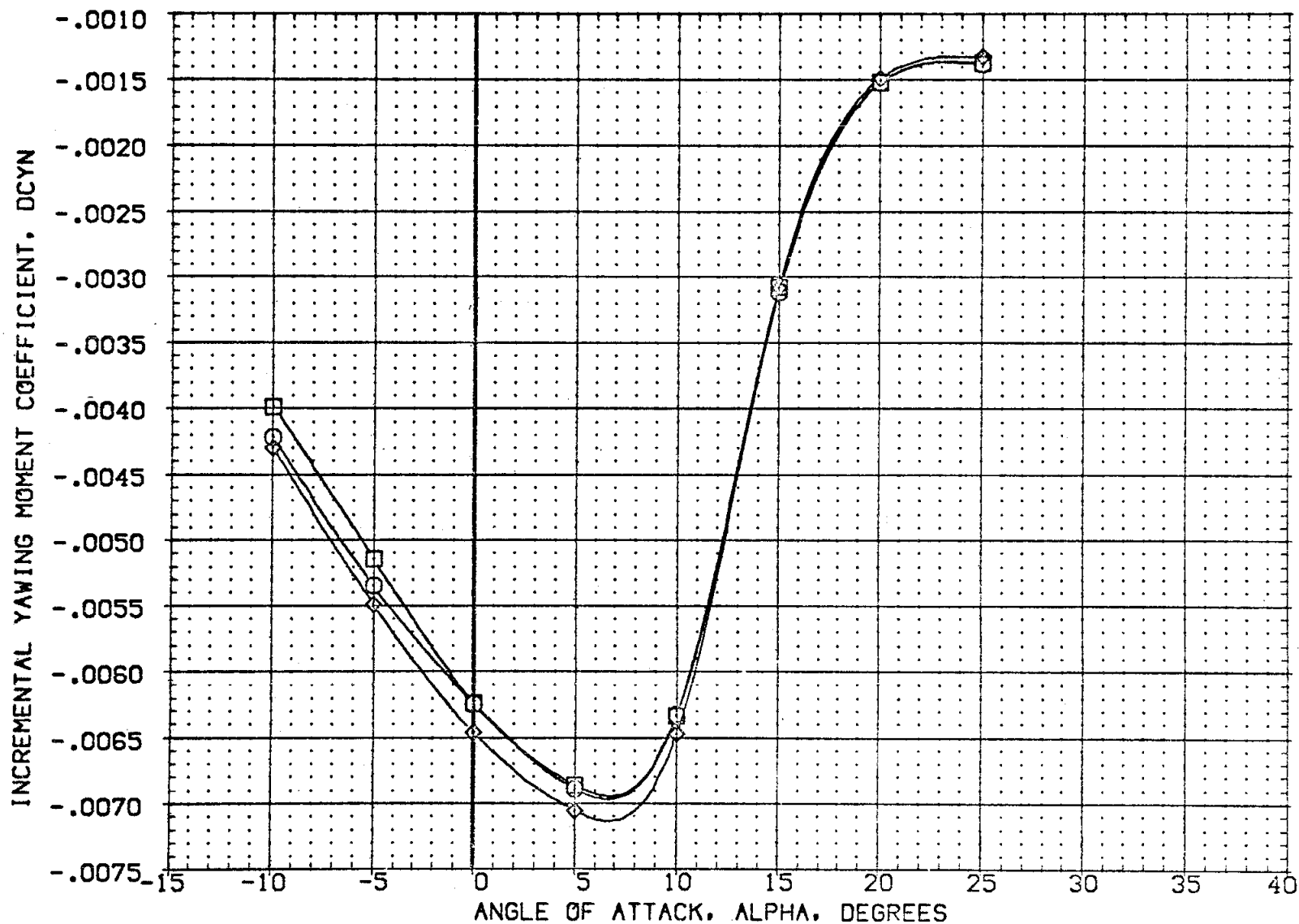


FIG 13 EFFECT OF BOFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	YAW	BDFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2020)	OA105 CFHT109 MODEL 32-0 (0)N51	YAW	-14.250	504.000	.000	7.000	SREF	2690.0000	SQ.FT.
(CH2021)	OA105 CFHT109 MODEL 32-0 (0)N51	YAW	.000	504.000	.000	7.000	LREF	474.8100	IN.
(CH2003)	OA105 CFHT109 MODEL 32-0 (0)N51	YAW	13.750	504.000	.000	7.000	BREF	936.6800	IN.
							XMRP	1076.6700	IN. XC
							YMRP	.0000	IN. YC
							ZMRP	375.0000	IN. ZC
							SCALE	.0100	

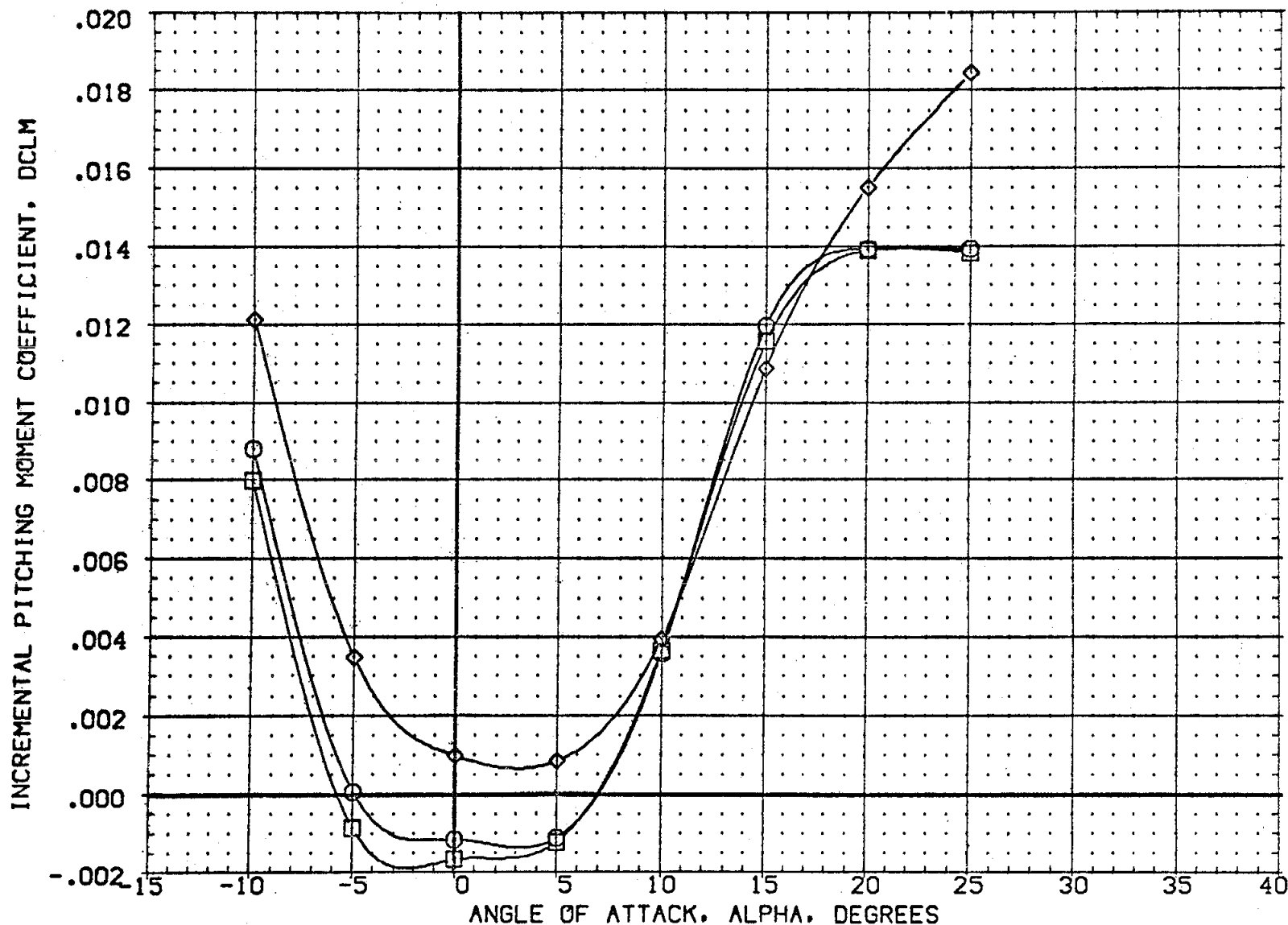


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION		BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2020)	□ OA105 CFHT109 MODEL 32-0 (0)N51	YAW	-14.250	504.000	.000	7.000	SREF	2690.0000	SQ.FT.
(CH2021)	◇ OA105 CFHT109 MODEL 32-0 (0)N51	YAW	.000	504.000	.000	7.000	LREF	474.8100	IN.
(CH2003)	◇ OA105 CFHT109 MODEL 32-0 (0)N51	YAW	13.750	504.000	.000	7.000	BREF	936.6800	IN.
							XMRP	1076.6700	IN. X0
							YMRP	.0000	IN. Y0
							ZMRP	375.0000	IN. Z0
							SCALE	.0100	

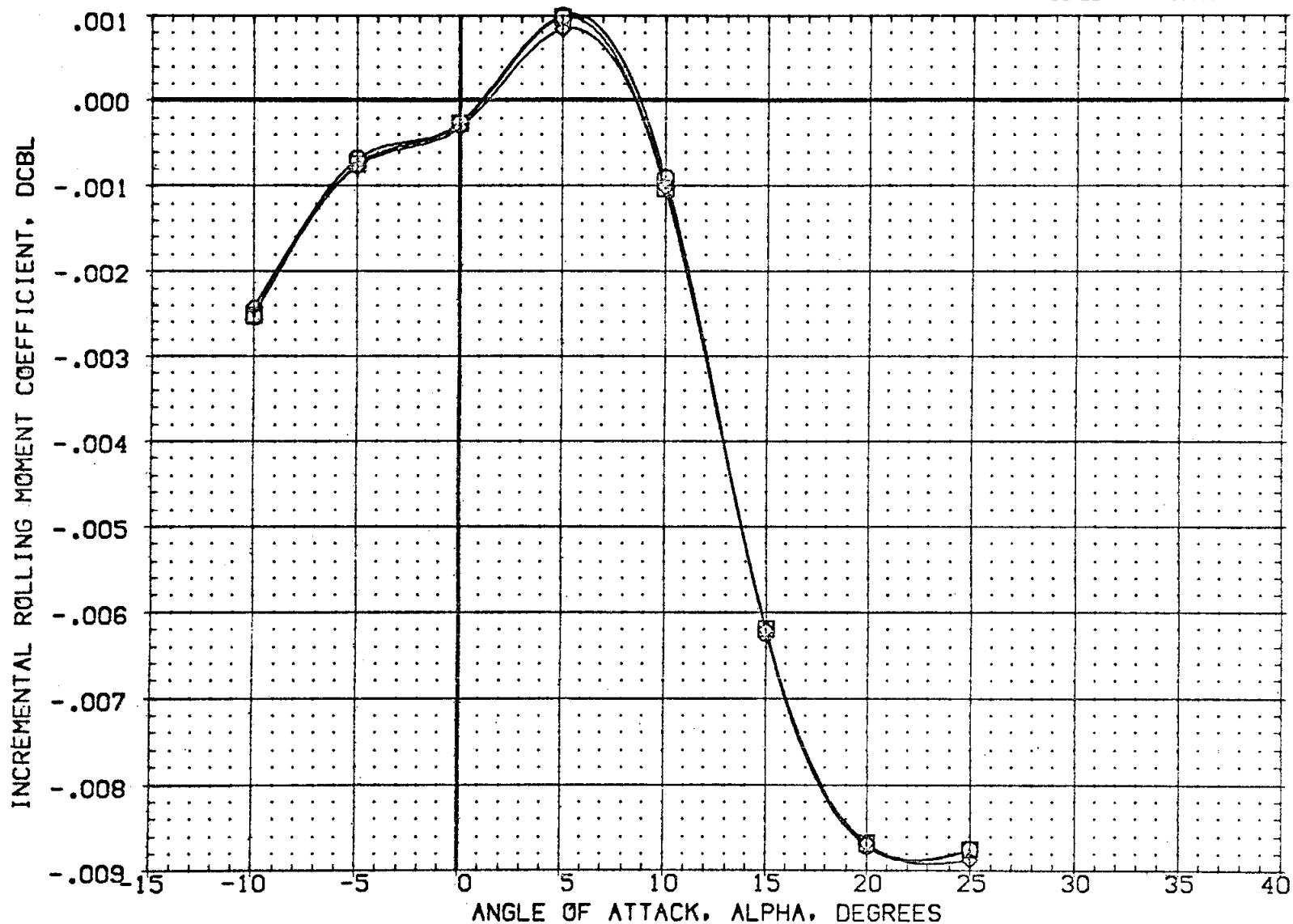


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(CH2020)	OA105 CFHT109 MODEL 32-0 (0)N51	-14.250	504.000	.000	7.000	SREF 2690.0000 SQ.FT.
(CH2021)	OA105 CFHT109 MODEL 32-0 (0)N51	.000	504.000	.000	7.000	LREF 474.8100 IN.
(CH2003)	OA105 CFHT109 MODEL 32-0 (0)N51	13.750	504.000	.000	7.000	BREF 936.6800 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

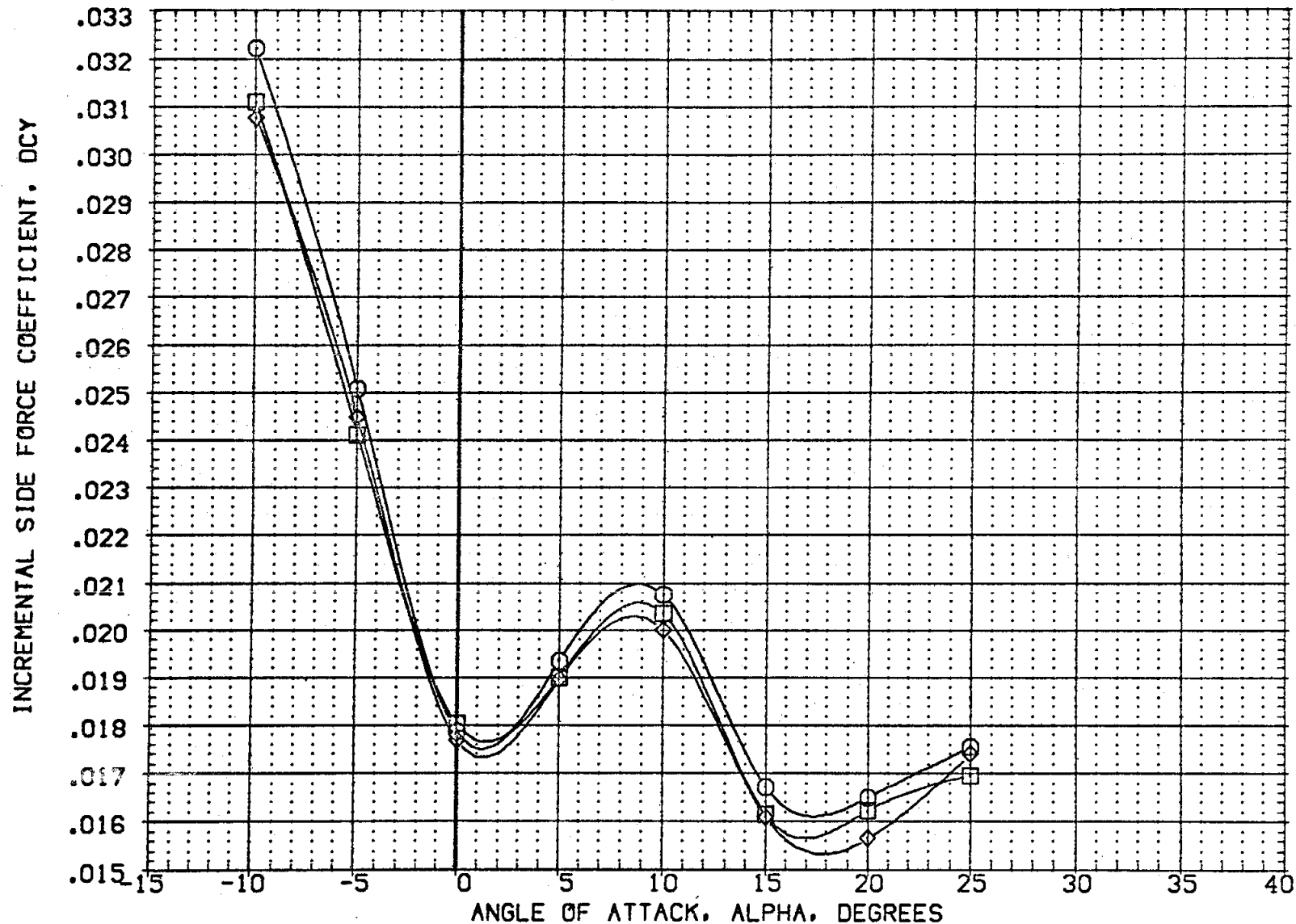


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRS	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH220N)	0A105 CFHT109 MODEL 32-0 (0)N51	-14.250	504.000	.000	7.000	SREF 2690.0000 SQ.FT.
(ZH221N)	0A105 CFHT109 MODEL 32-0 (0)N51	.000	504.000	.000	7.000	LREF 474.8100 IN.
(ZH203N)	0A105 CFHT109 MODEL 32-0 (0)N51	13.750	504.000	.000	7.000	BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) N52	-14.250	.000	.000	.000	XMRP 1076.6700 IN. X0
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N51	.000	.000	.000	.000	YMRP .0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) N51	13.750	.000	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

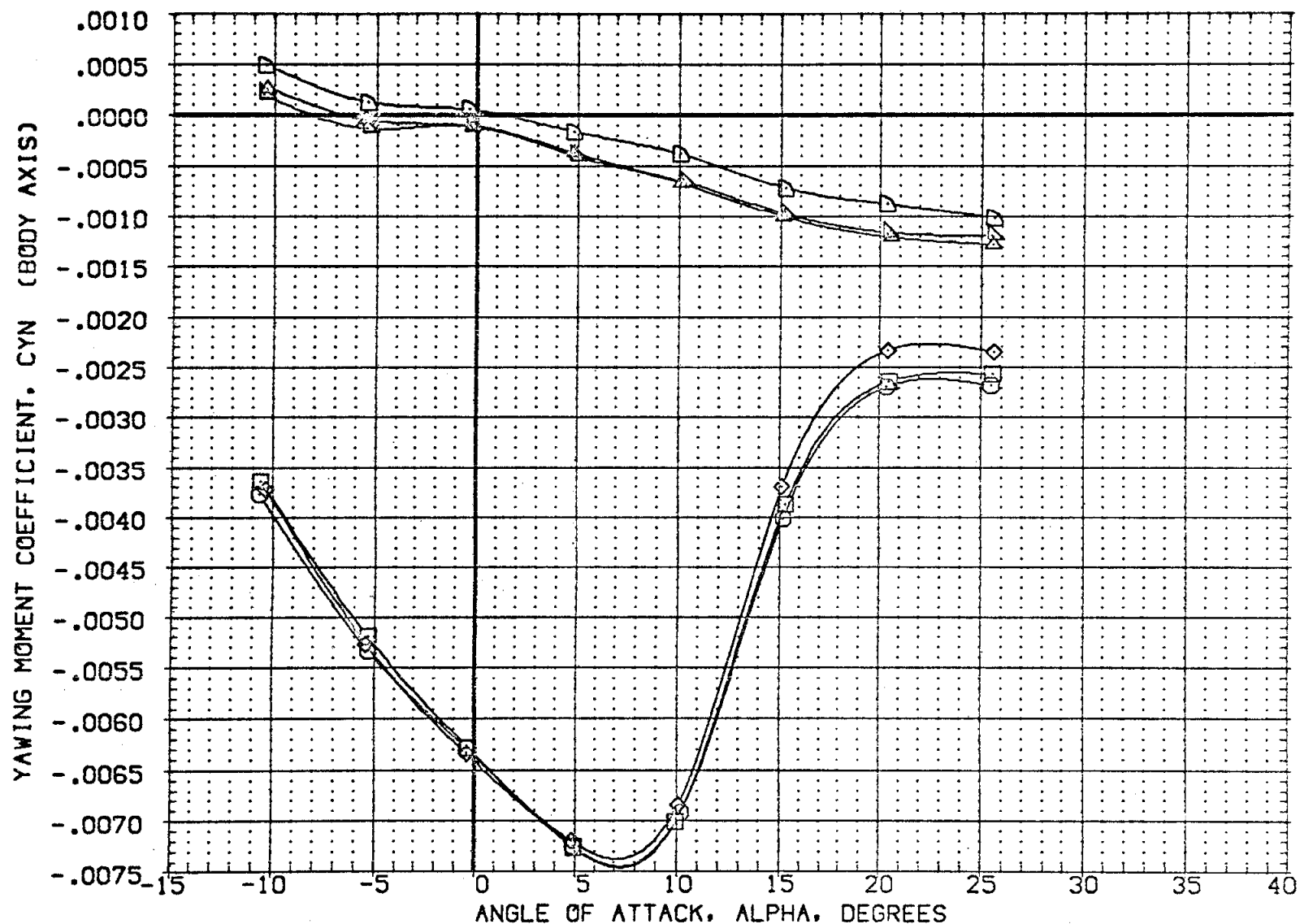


FIG 13 EFFECT OF BOFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION		BDFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION		
(ZH220N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	-14.250	504.000	.000	7.000	SREF	2690.0000	SQ.FT.
(ZH221N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	.000	504.000	.000	7.000	LREF	474.8100	IN.
(ZH203N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	-13.750	504.000	.000	7.000	BREF	936.6800	IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) N52	RCS OFF	-14.250	.000	.000	.000	XM RP	1076.6700	IN. X0
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	.000	.000	.000	.000	YM RP	.0000	IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000	ZM RP	375.0000	IN. Z0
							SCALE	.0100	

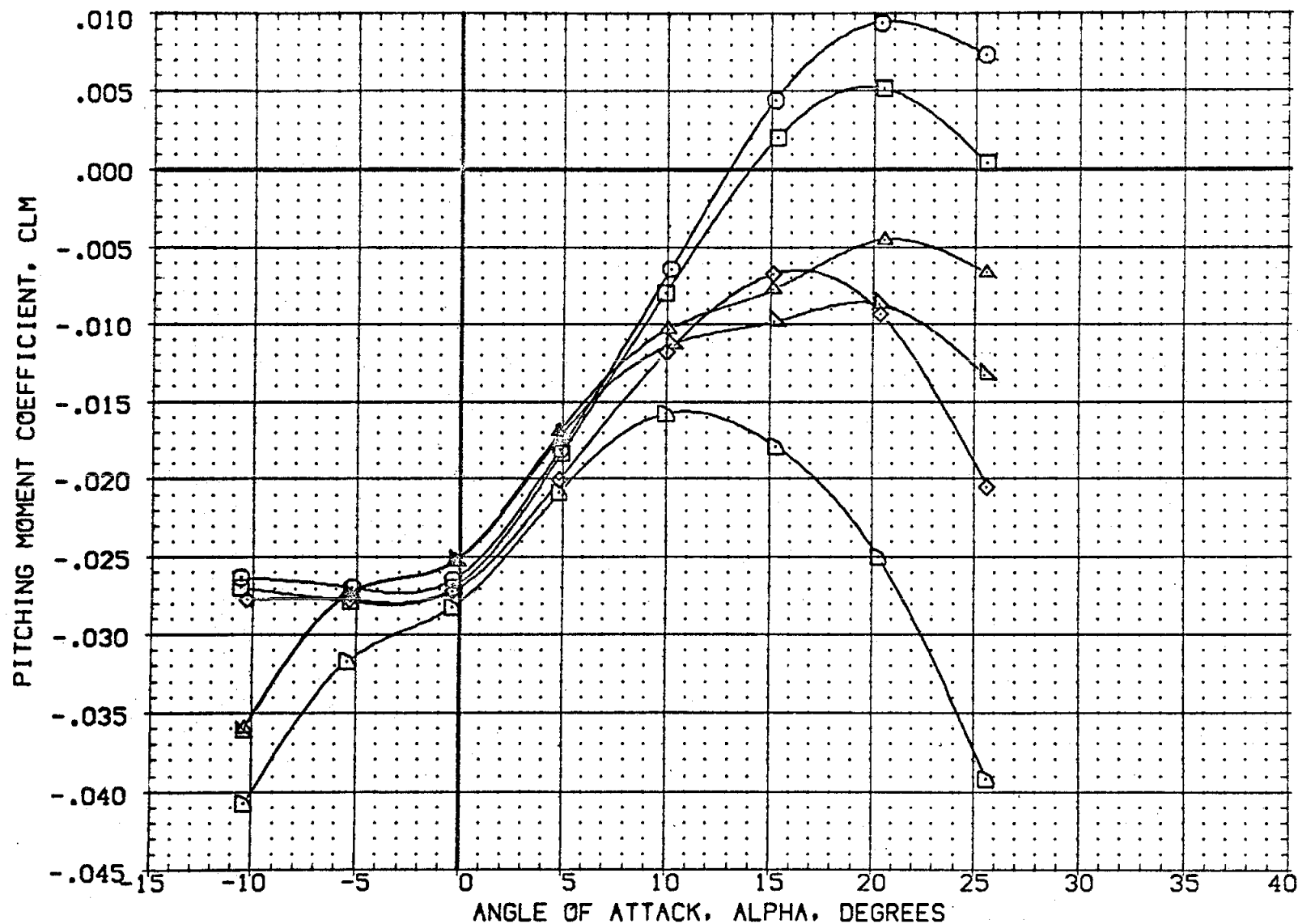


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	D-SIM	REFERENCE INFORMATION
(ZH220N)	0A105 CFHT109 MODEL 32-0 (0)N51	-14.250	504.000	.000	7.000	SREF 2690.0000 SQ.FT.
(ZH221N)	0A105 CFHT109 MODEL 32-0 (0)N51	.000	504.000	.000	7.000	LREF 474.8100 IN.
(ZH203N)	0A105 CFHT109 MODEL 32-0 (0)N51	13.750	504.000	.000	7.000	BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) NNS2	-14.250	.000	.000	.000	XMRP 1076.6700 IN. XO
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NNS1	.000	.000	.000	.000	YMRP .0000 IN. YO
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) N51	13.750	.000	.000	.000	ZMRP 375.0000 IN. ZO
						SCALE .0100

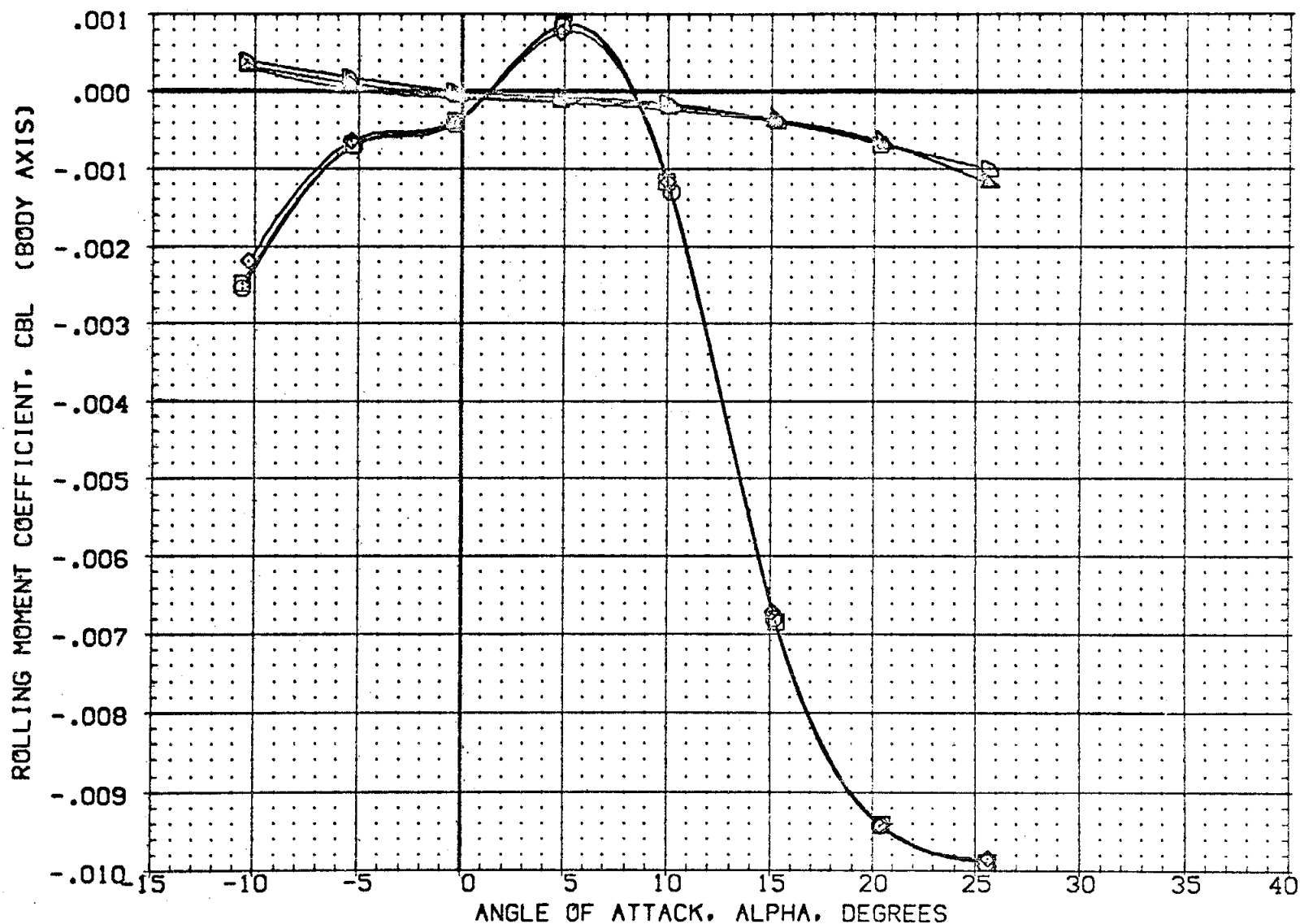


FIG 13 EFFECT OF BOFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH220N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	-14.250	504.000	.000	7.000 SREF 2690.0000 SQ.FT.
(ZH221N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	.000	504.000	.000	7.000 LREF 474.8100 IN.
(ZH203N)	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	13.750	504.000	.000	7.000 BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-14.250	.000	.000	.000 XMRP 1076.6700 IN. XO
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	.000 YMRP .0000 IN. YO
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000 ZMRP 375.0000 IN. ZO
						SCALE .0100

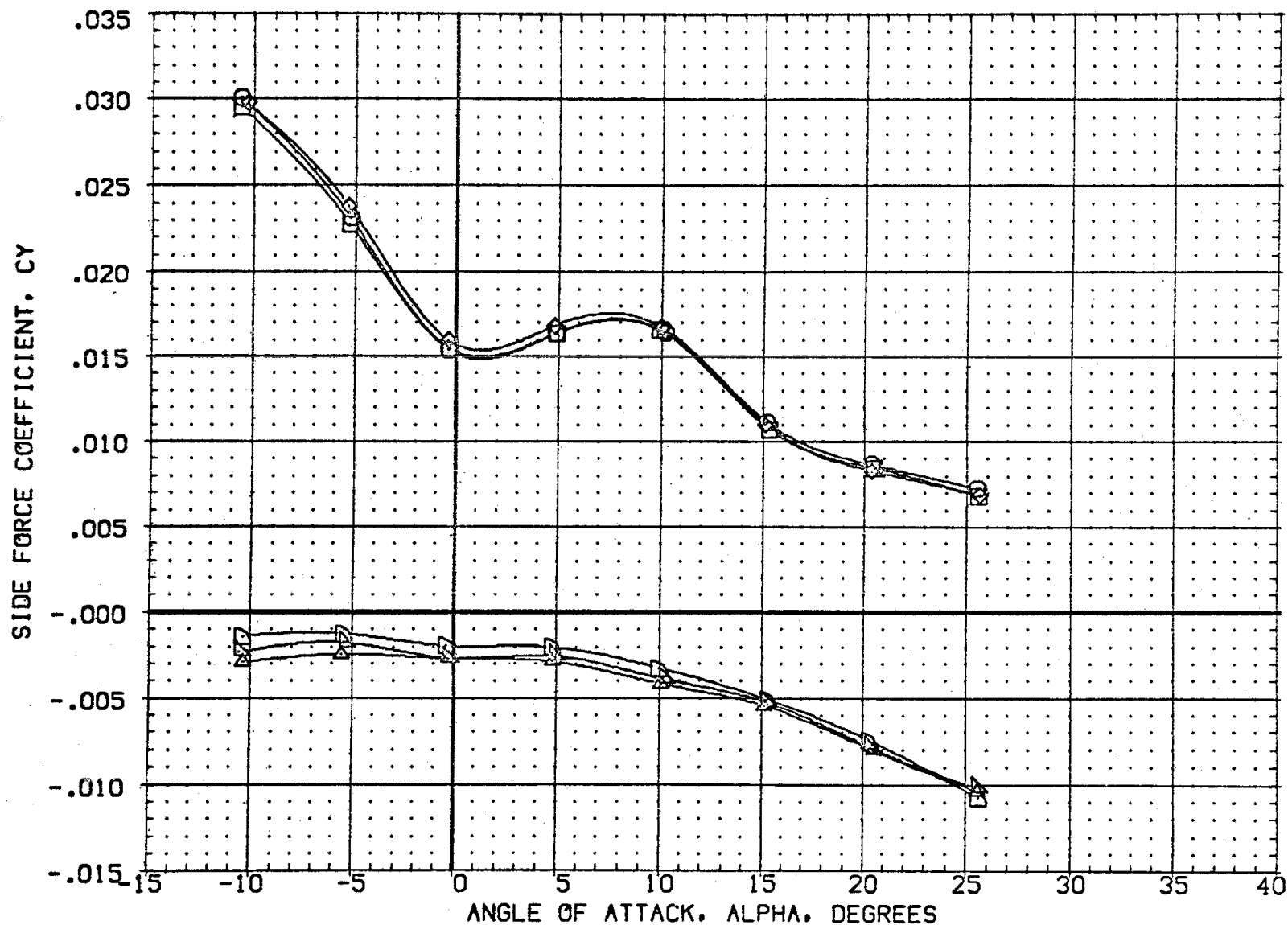


FIG 13 EFFECT OF BOFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2019) ☐ 0A105 CFHT109 MODEL 32-0 (0)N51 YAW  
(CH2002) ☐ 0A105 CFHT109 MODEL 32-0 (0)N51 YAW

BDFLAP -14.250 179.000  
13.750 179.000

ELEVON .000 20.000  
.000 20.000

Q-SIM

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. XO  
YMRP .0000 IN. YO  
ZMRP 375.0000 IN. ZO  
SCALE .0100

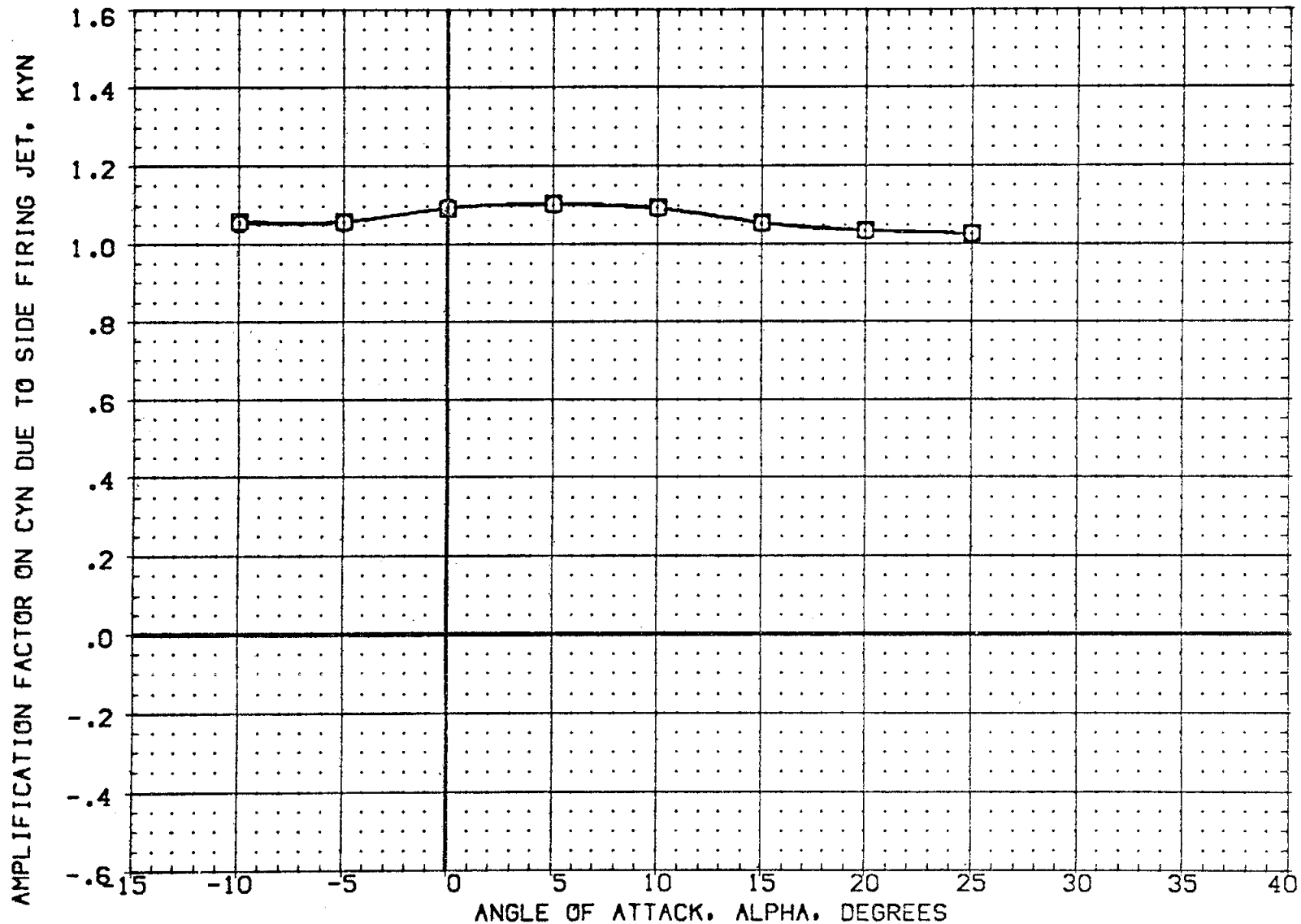


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2019)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51 YAW  
(CH2002)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51 YAW

BDFLAP PCRC5 ELEVON Q-SIM  
-14.250 179.000 .000 20.000  
13.750 179.000 .000 20.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

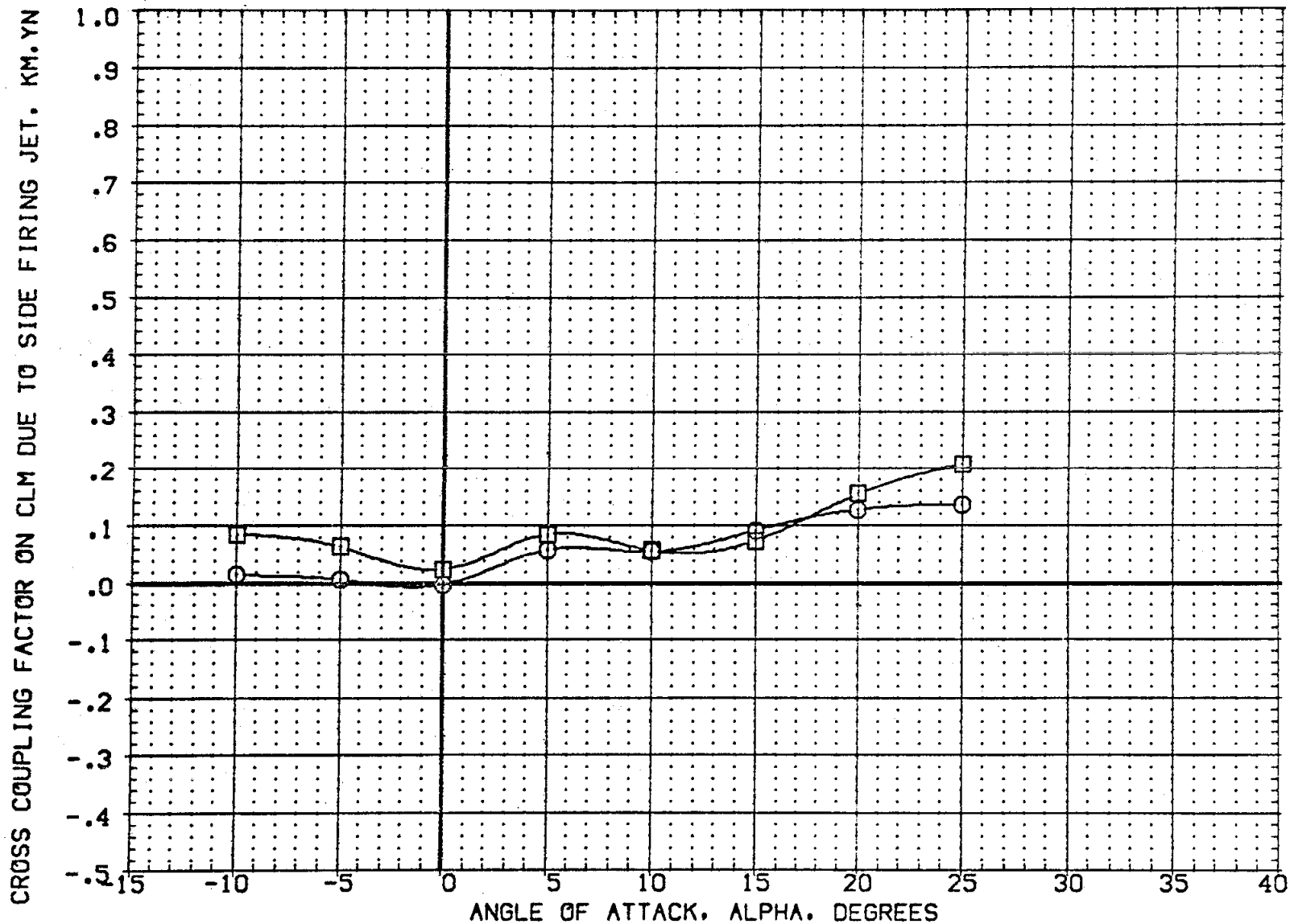


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2019) □ OA105 CFHT109 MODEL 32-0 (0)NS1  
(CH2002) □ OA105 CFHT109 MODEL 32-0 (0)NS1

YAW  
YAW

BDFLAP PCRC5 ELEVON Q-SIM  
-14.250 179.000 .000 20.000  
13.750 179.000 .000 20.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. XO  
YMRP .0000 IN. YO  
ZMRP 375.0000 IN. ZO  
SCALE .0100

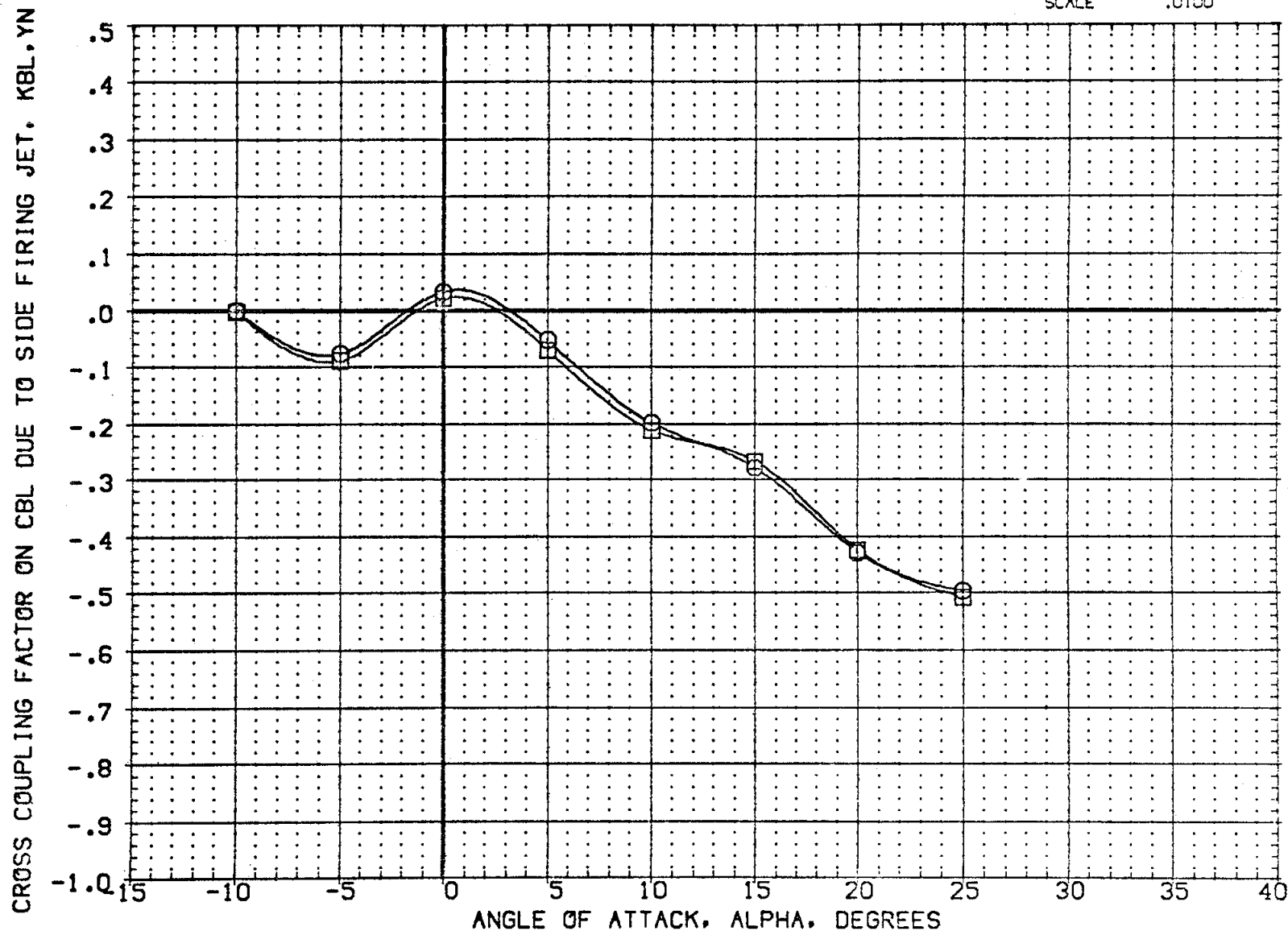


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2019)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51  
 (CH2002)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51

YAW  
 YAW

BDFLAP

-14.250  
 13.750

PCRC5

179.000  
 179.000

ELEVON

.000  
 .000

Q-SIM

20.000  
 20.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 935.6800 IN.  
 XMRP 1075.6700 IN. XO  
 YMRP .0000 IN. YO  
 ZMRP 375.0000 IN. ZO  
 SCALE .0100

AMPLIFICATION FACTOR ON CY DUE TO SIDE FIRING JET, KY

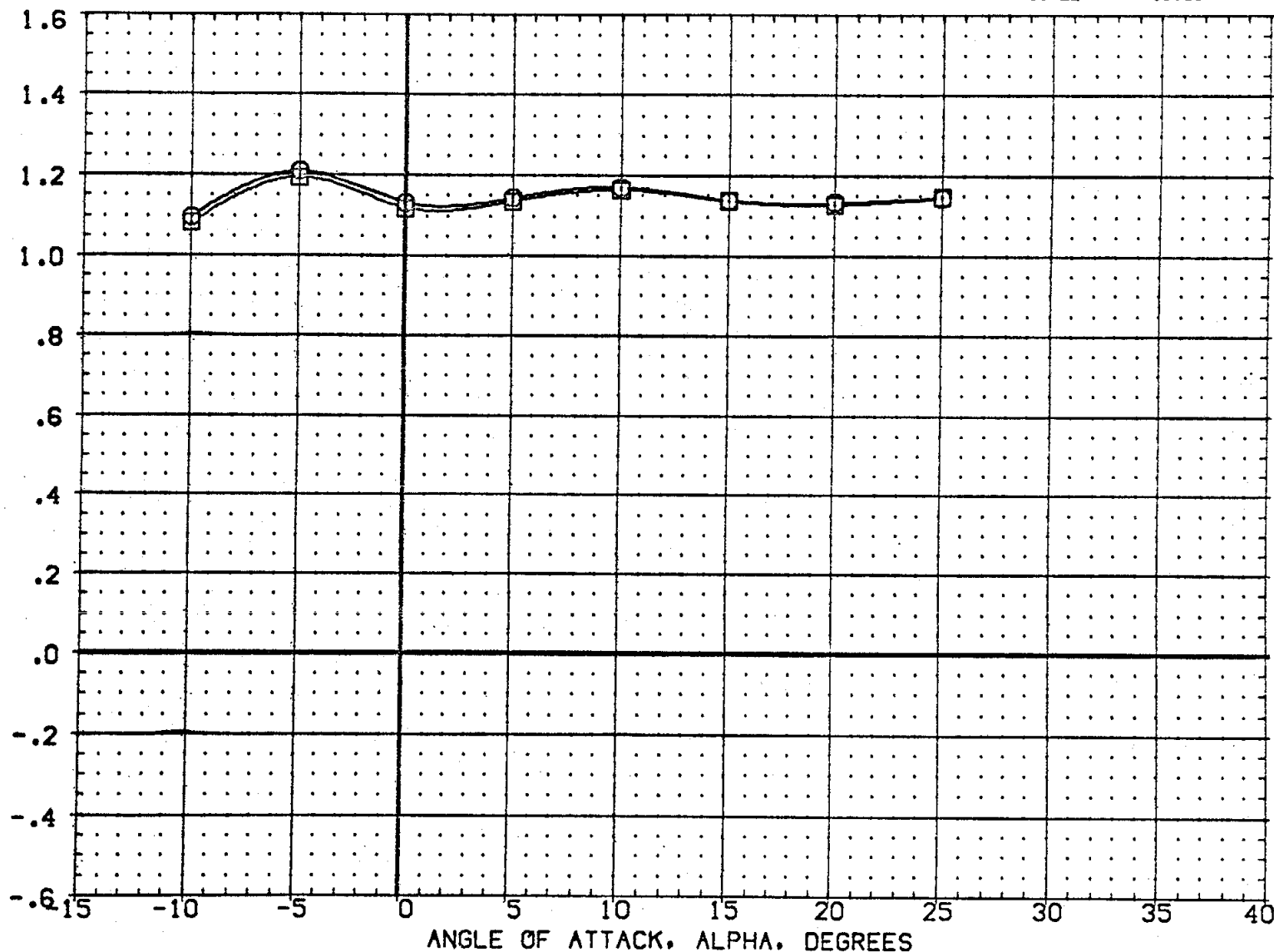


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(CH2019)	0A105 CFHT109 MODEL 32-0 (0)N51	-14.250	179.000	.000	20.000	SREF 2690.0000 SQ.FT.
(CH2002)	0A105 CFHT109 MODEL 32-0 (0)N51	13.750	.000	20.000	LREF 474.8100 IN.	
						BREF 936.6800 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

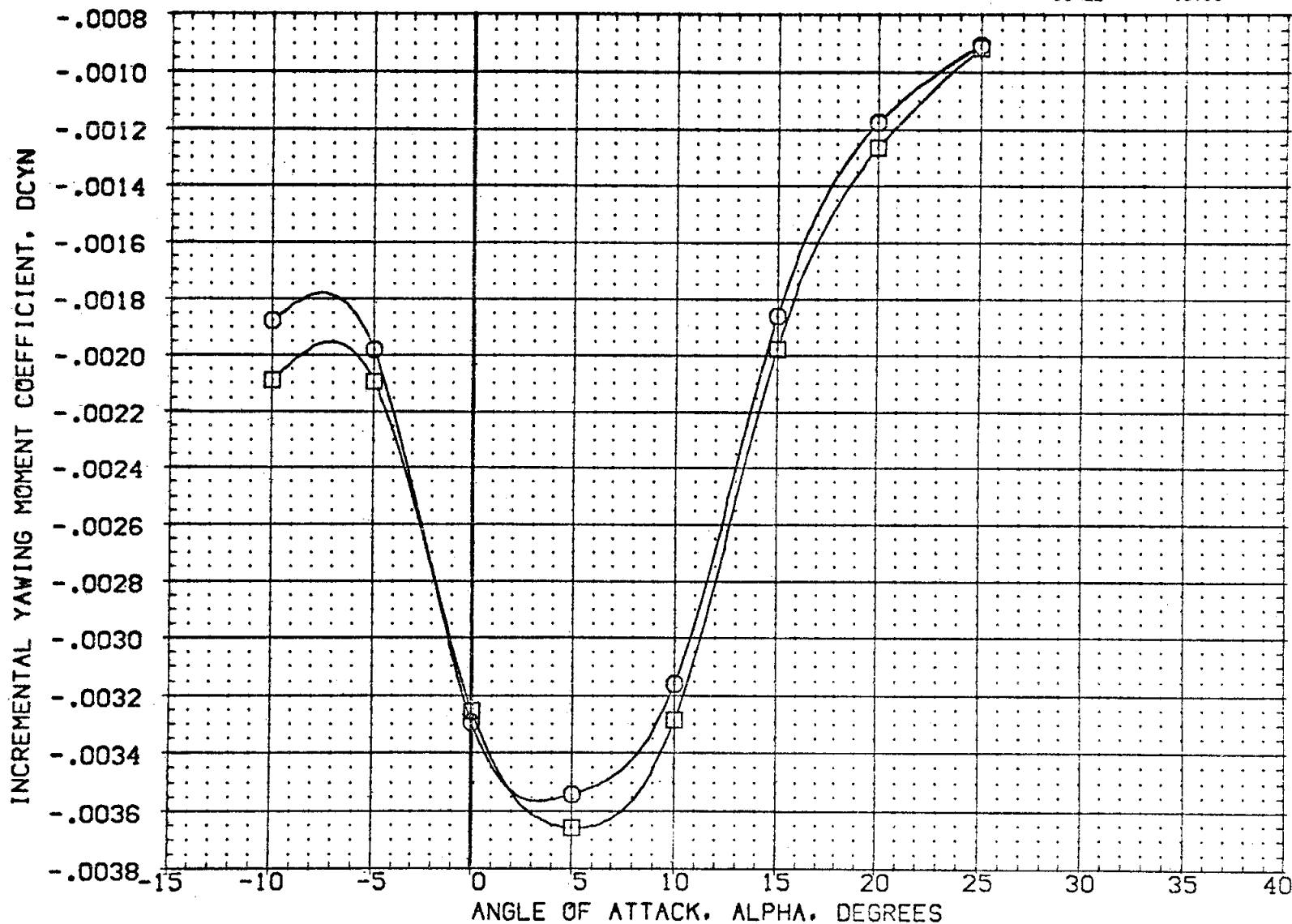


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2019)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51  
 (CH2002)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51

YAW  
 YAW

BDFLAP

-14.250 179.000  
 13.750 179.000

PCRC5

ELEVON

Q-SIM

20.000  
 20.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. XO  
 YMRP .0000 IN. YO  
 ZMRP 375.0000 IN. ZO  
 SCALE .0100

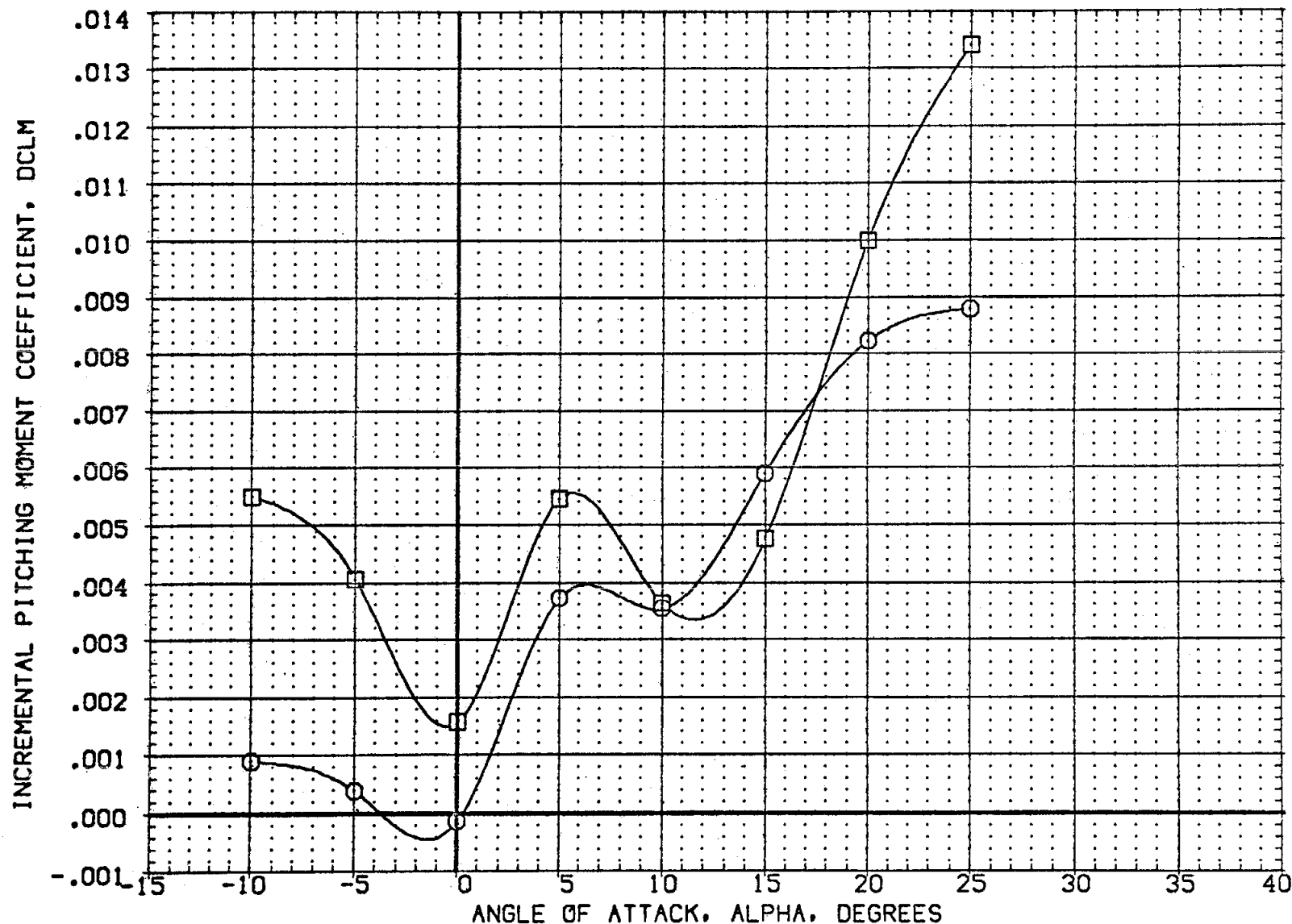


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2019)  DA105 CFHT109 MODEL 32-0 (0)N51  
(CH2002)  DA105 CFHT109 MODEL 32-0 (0)N51

YAW  
YAW

BDFLAP PCRC5  
-14.250 179.000  
13.750 179.000

ELEVON  
.000  
.000

Q-SIM  
20.000  
20.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

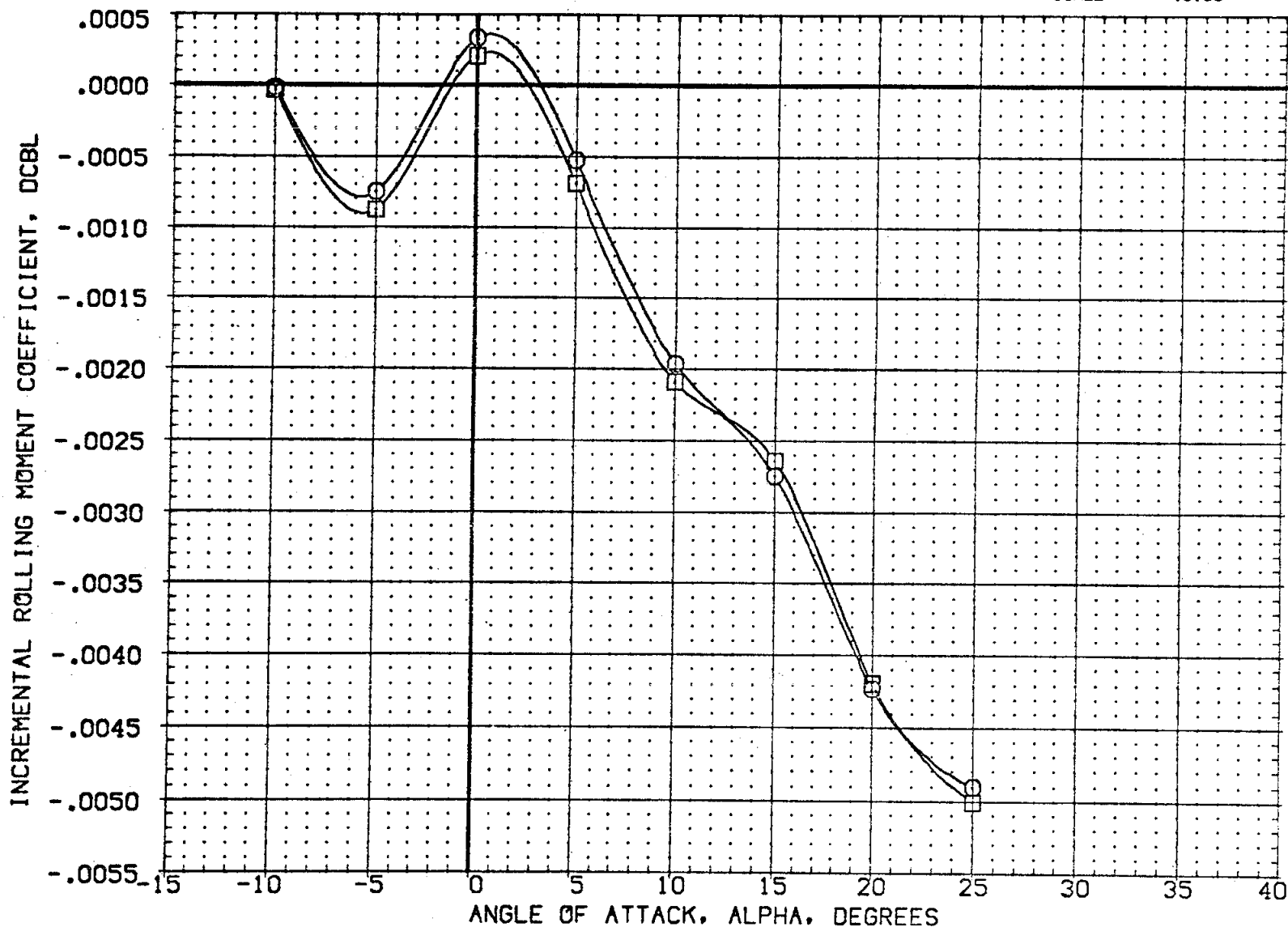


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2019)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51  
 (CH2002)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51

YAW  
 YAW

BOFLAP

-14.250 179.000  
 13.750 179.000

PCRC

179.000  
 179.000

ELEVON

.000  
 .000

Q-SIM

20.000  
 20.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. XO  
 YMRP .0000 IN. YO  
 ZMRP 375.0000 IN. ZO  
 SCALE .0100

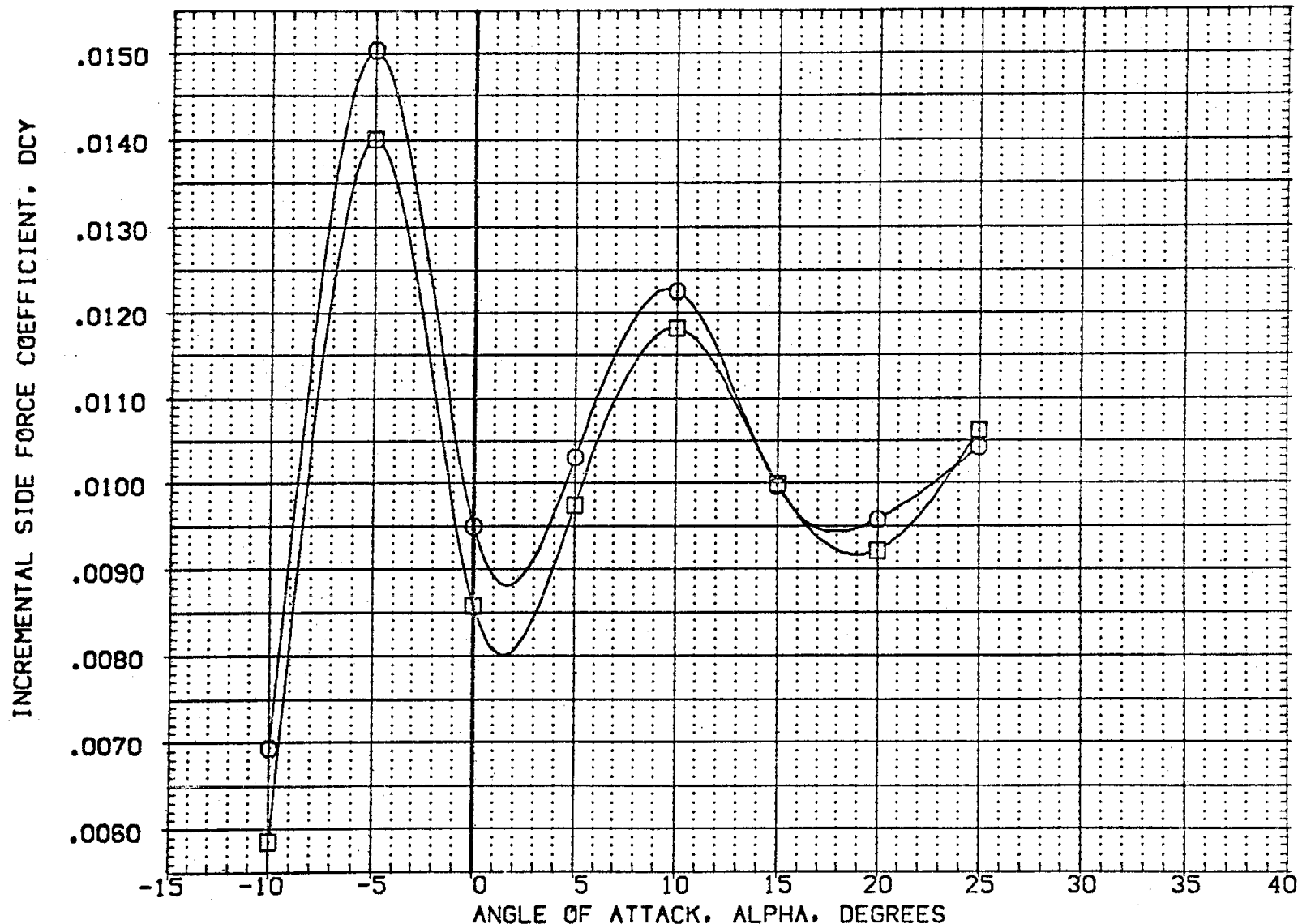


FIG 13 EFFECT OF BOFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		BOFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(ZH219N)	□	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	-14.250	179.000	.000	20.000	SREF	2690.0000	SQ.FT.
(ZH202N)	□	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	13.750	179.000	.000	20.000	LREF	474.8100	IN.
(ZH202F)	⊗	0A105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-14.250	.000	.000	.000	BREF	936.6800	IN.
(ZH201F)	△	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000	XMRF	1076.6700	IN. X0
								YMRF	.0000	IN. Y0
								ZMRF	375.0000	IN. Z0
								SCALE	.0100	

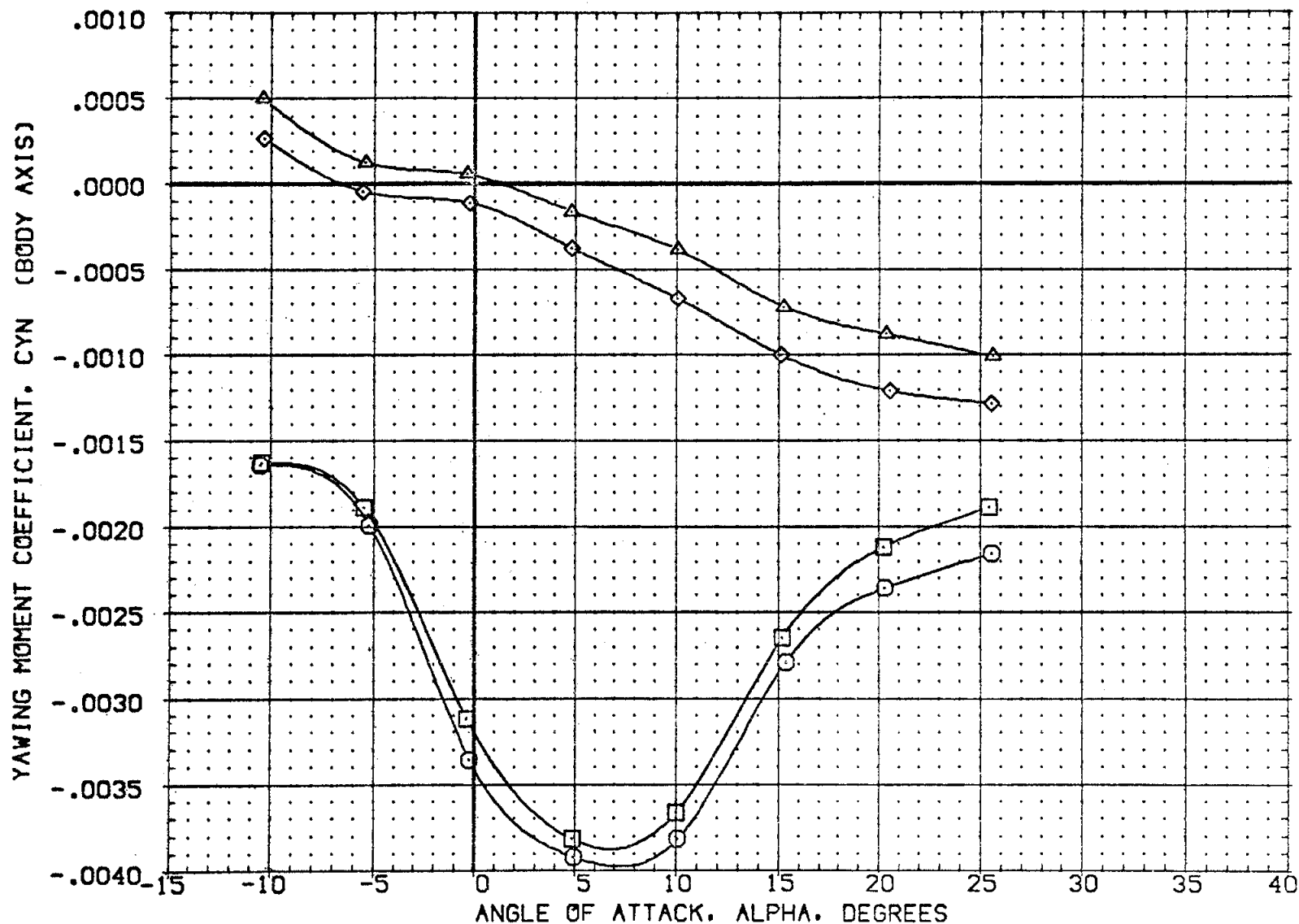


FIG 13 EFFECT OF BOFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		BOFLAP	PCRCS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(ZH219N)	○	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	-14.250	179.000	.000	20.000	SREF	2690.0000	SQ.FT.
(ZH202N)	□	0A105 CFHT109 MODEL 32-0 (0)N51	YAW	13.750	179.000	.000	20.000	LREF	474.8100	IN.
(ZH202F)	◇	0A105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-14.250	.000	.000	.000	BREF	936.6800	IN.
(ZH201F)	△	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000	XMRP	1076.6700	IN. X0
								YMRP	.0000	IN. Y0
								ZMRP	375.0000	IN. Z0
								SCALE	.0100	

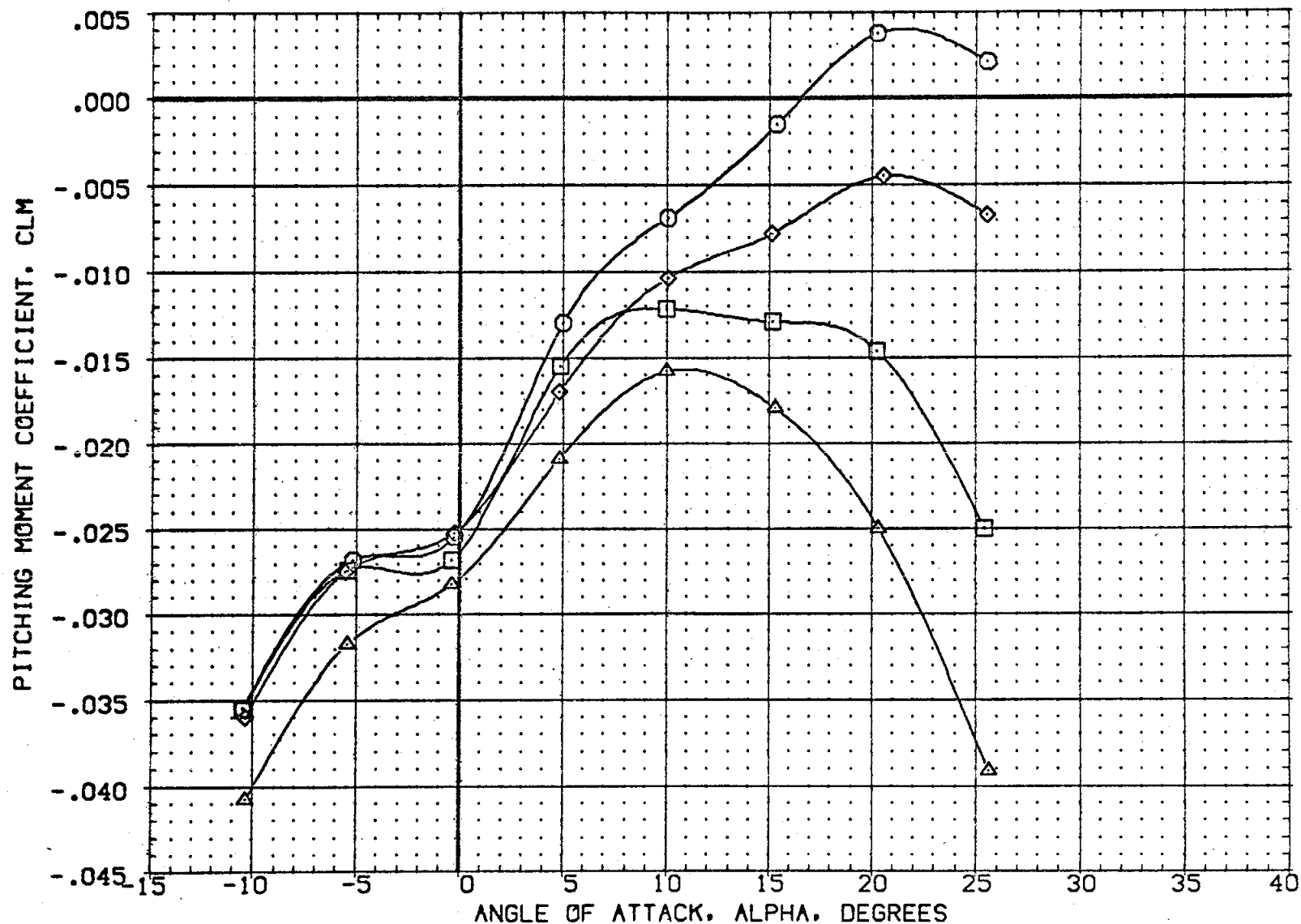


FIG 13 EFFECT OF BOFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH219N)	OA105 CFHT109 MODEL 32-0 (0)N51	-14.250	179.000	.000	20.000	SREF 2690.0000 SQ.FT.
(ZH202N)	OA105 CFHT109 MODEL 32-0 (0)N51	-13.750	179.000	.000	20.000	LREF 474.8100 IN.
(ZH202F)	OA105 CFHT109 MODEL 32 0(0) N52	-14.250	.000	.000	.000	BREF 936.6800 IN.
(ZH201F)	OA105 CFHT109 MODEL 32 0(0) N51	13.750	.000	.000	.000	XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

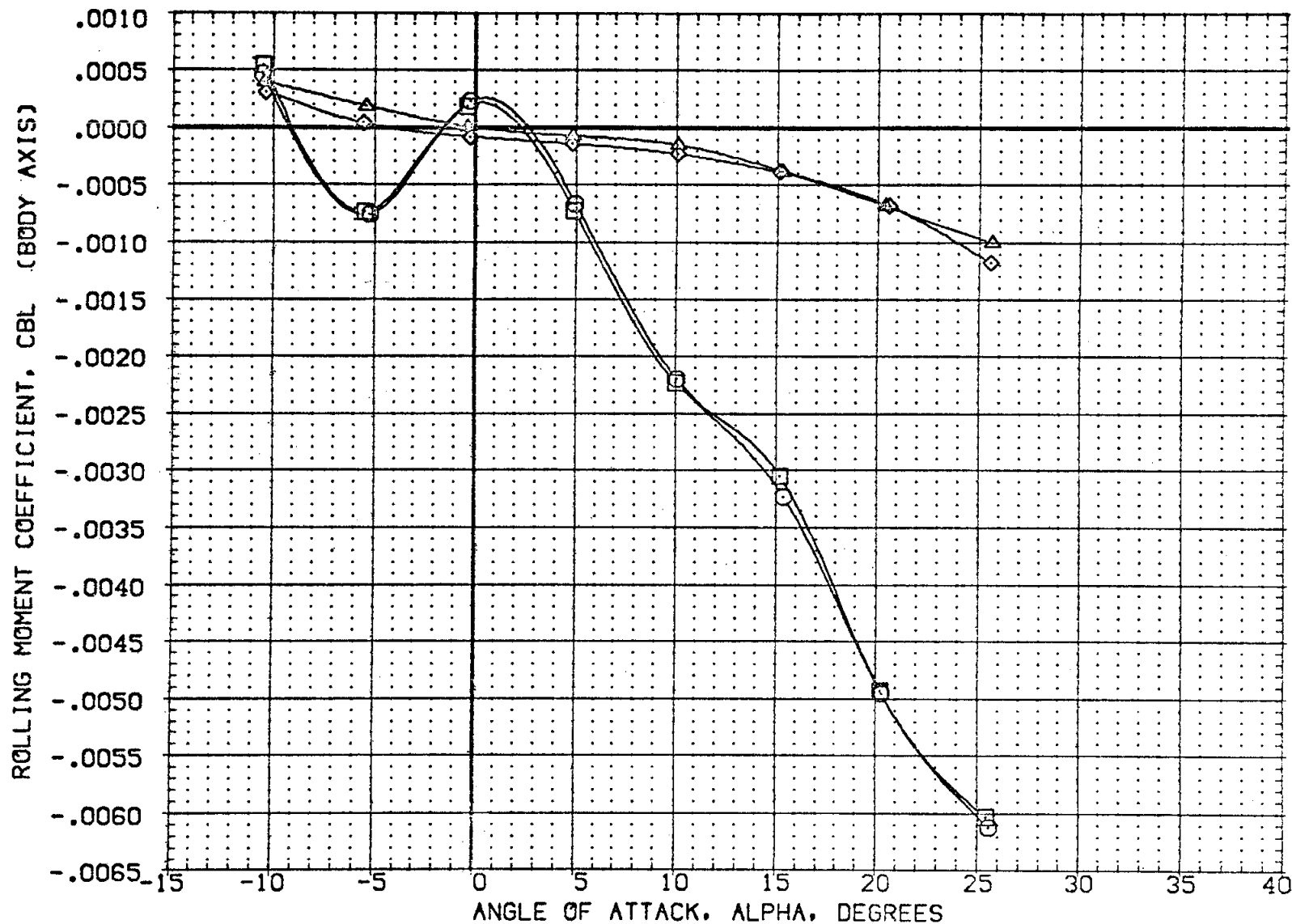


FIG 13 EFFECT OF BOFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH219N)	OA105 CFHT109 MODEL 32-0 (0)N51	-14.250	179.000	.000	20.000	SREF 2690.0000 SQ.FT.
(ZH202N)	OA105 CFHT109 MODEL 32-0 (0)N51	13.750	179.000	.000	20.000	LREF 474.8100 IN.
(ZH202F)	OA105 CFHT109 MODEL 32 0(0) NNS2	-14.250	.000	.000	.000	BREF 936.6800 IN.
(ZH201F)	OA105 CFHT109 MODEL 32 0(0) N51	13.750	.000	.000	.000	XMRP 1076.6700 IN. XO
						YMRP .0000 IN. YO
						ZMRP 375.0000 IN. ZO
						SCALE .0100

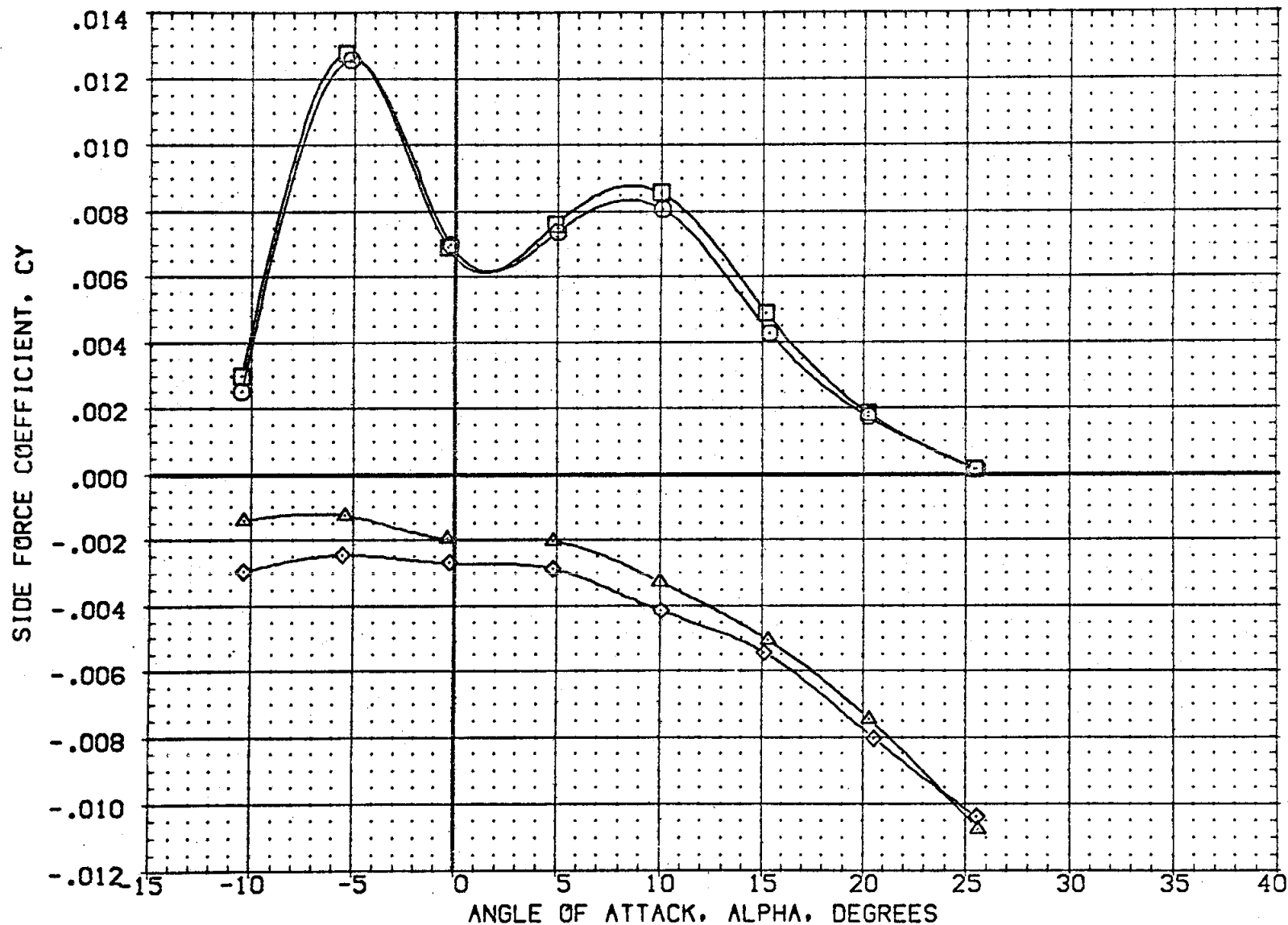


FIG 13 EFFECT OF BOFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

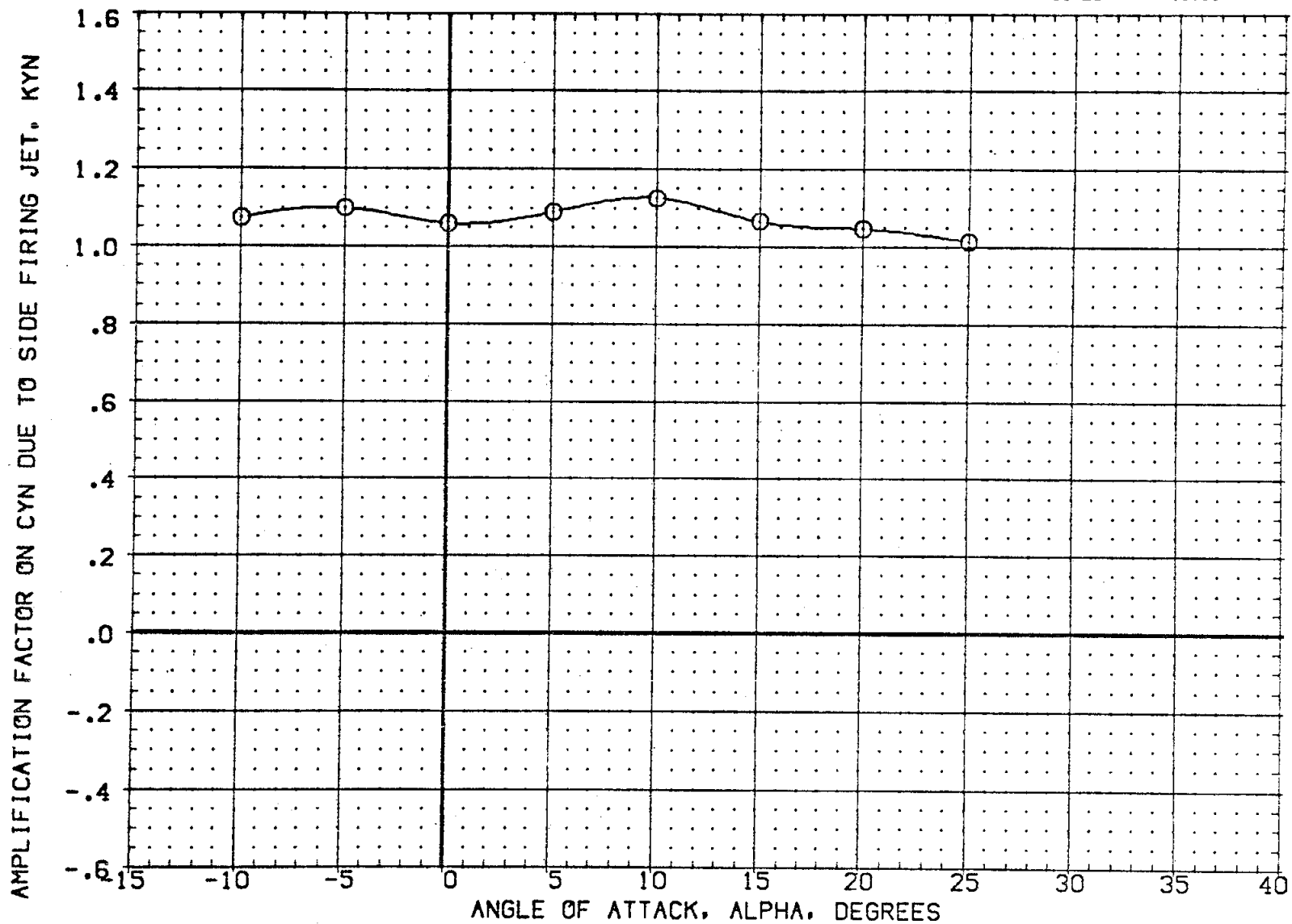


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2001) O 0A105 CFHT109 MODEL 32-0 (O)N51

YAW

BDFLAP  
13.750

PCRC5  
72.000

ELEVON  
.000

Q-SIM  
50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. XG  
YMRP .0000 IN. YG  
ZMRP 375.0000 IN. ZG  
SCALE .0100

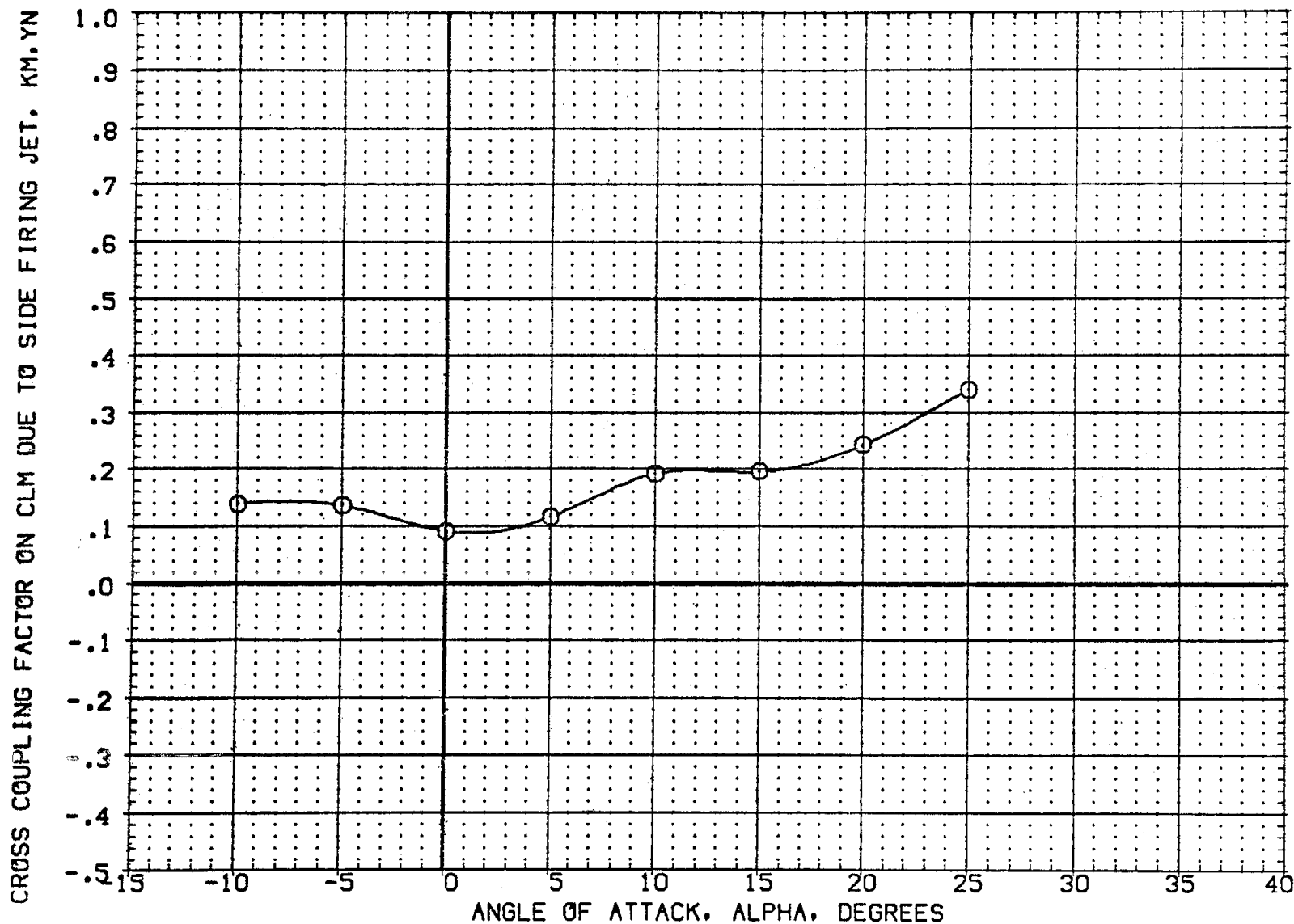


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2001) ○ 0A105 CFHT109 MODEL 32-0 (0)N51

YAW

BOFLAP 13.750 PCPCS 72.000 ELEVON .000 Q-SIM 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

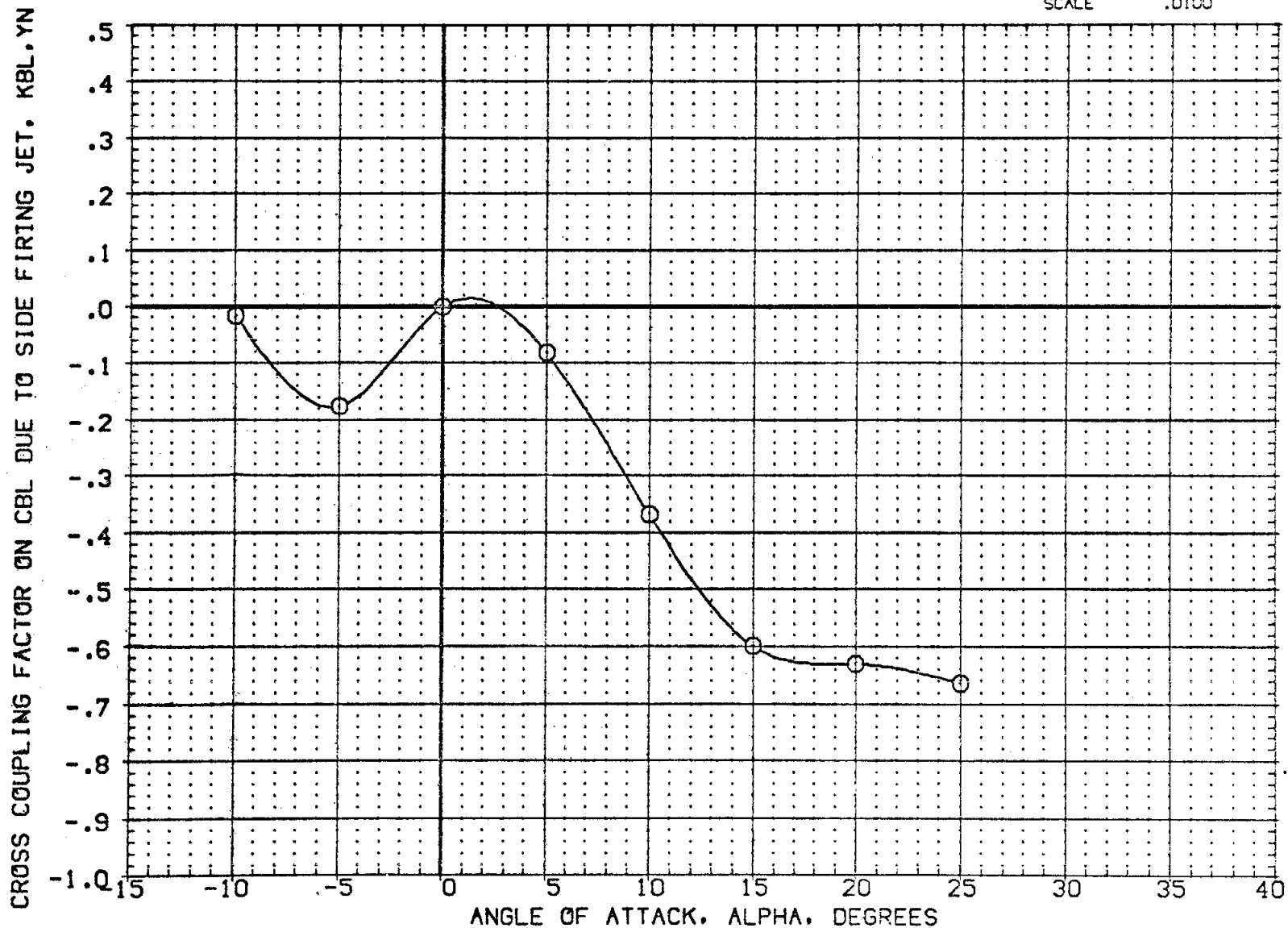


FIG 13 EFFECT OF BOFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2001) ○ 0A105 CFHT109 MODEL 32-0 (01N51)

YAW

BDFLAP 13.750 PCPCS 72.000 ELEVON .000 Q-SIM 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6900 IN.  
XMRP 1076.6700 IN. XO  
YMRP .0000 IN. YO  
ZMRP 375.0000 IN. ZO  
SCALE .0100

AMPLIFICATION FACTOR ON CY DUE TO SIDE FIRING JET, KY

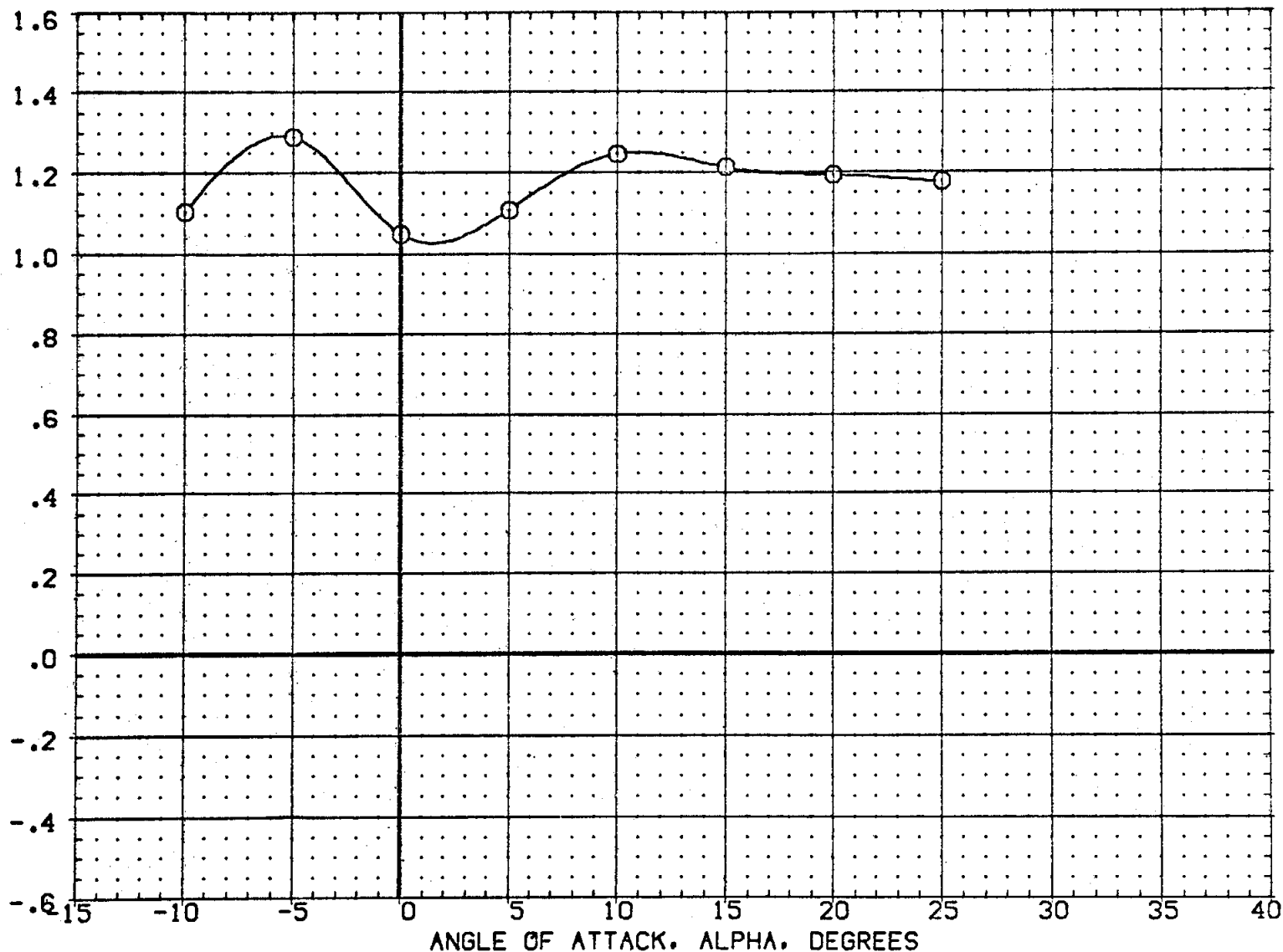


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2001) ○ 0A105 CFHT109 MODEL 32-0 (0)N51 YAW

BDFLAP PCPCS ELEVON Q-SIM  
13.750 72.000 .000 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

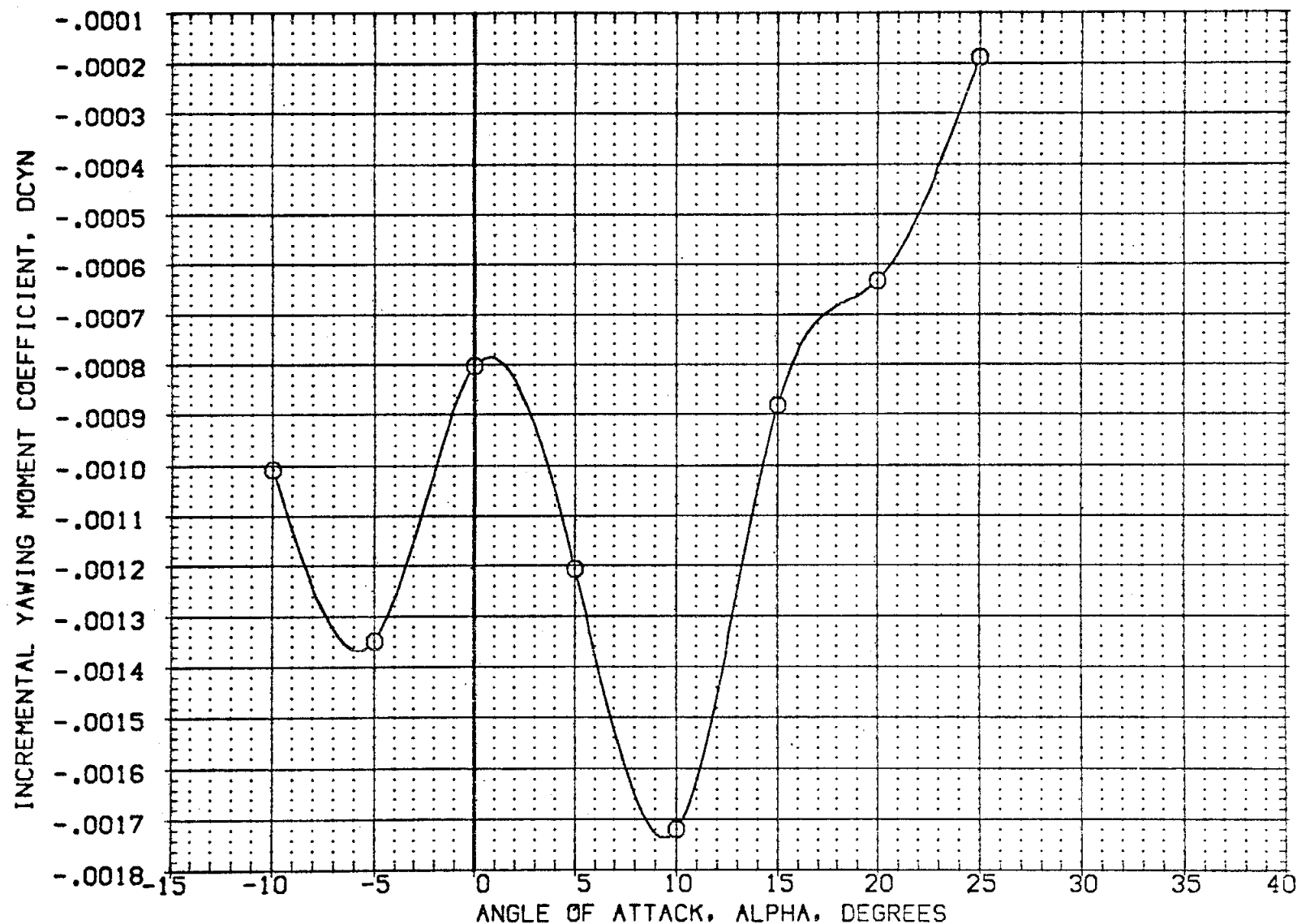


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2001) ○ OA105 CFHT109 MODEL 32-0 (0)N51

YAW

BDFLAP 13.750 PCRC5 72.000 ELEVON .000 0-SIM 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

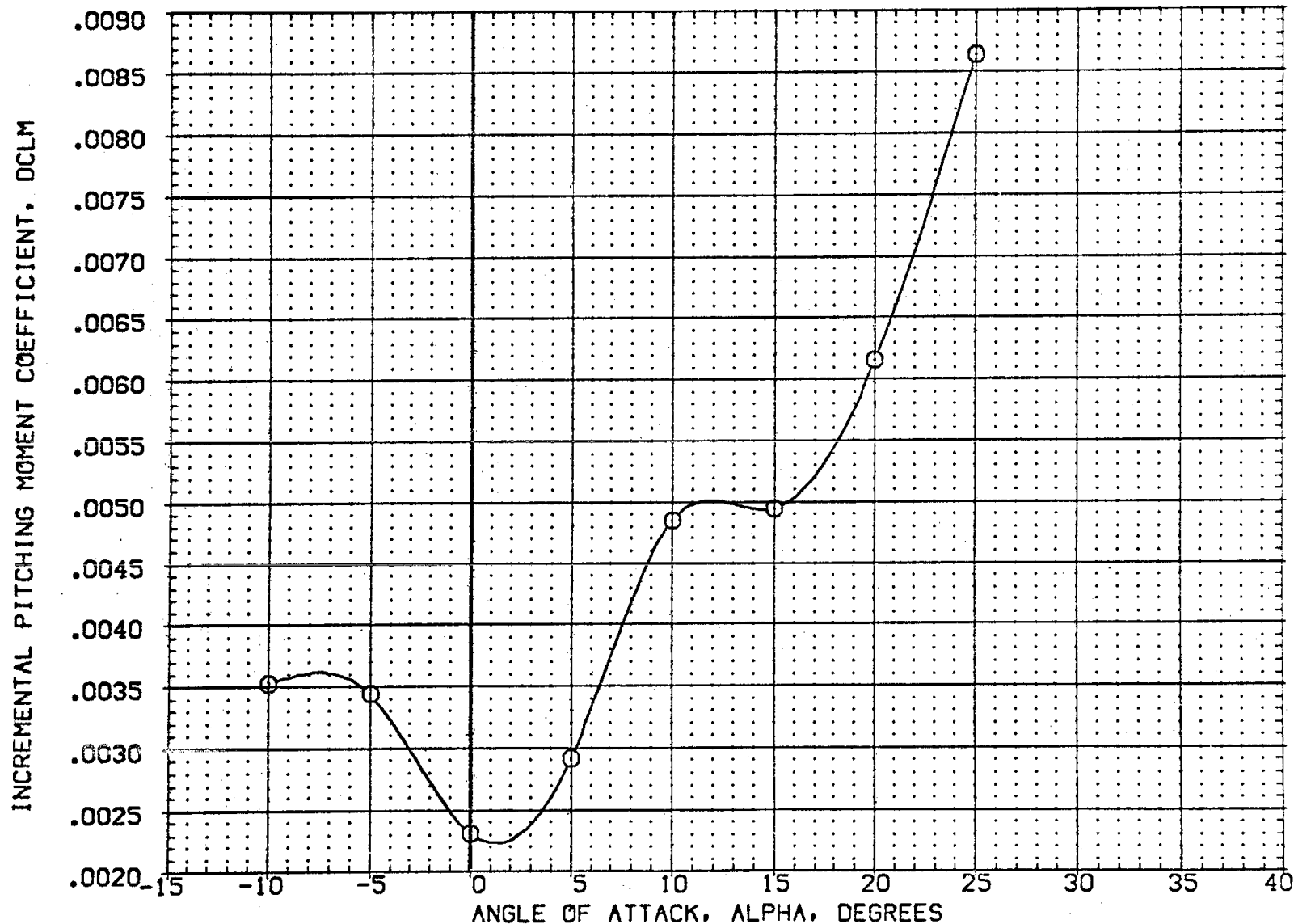


FIG 13 EFFECT OF BDflap DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2001) ○ 0A105 CFHT109 MODEL 32-0 (0)N51 YAW

BDFLAP PCRC5 ELEVON Q-SIM  
13.750 72.000 .000 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6900 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

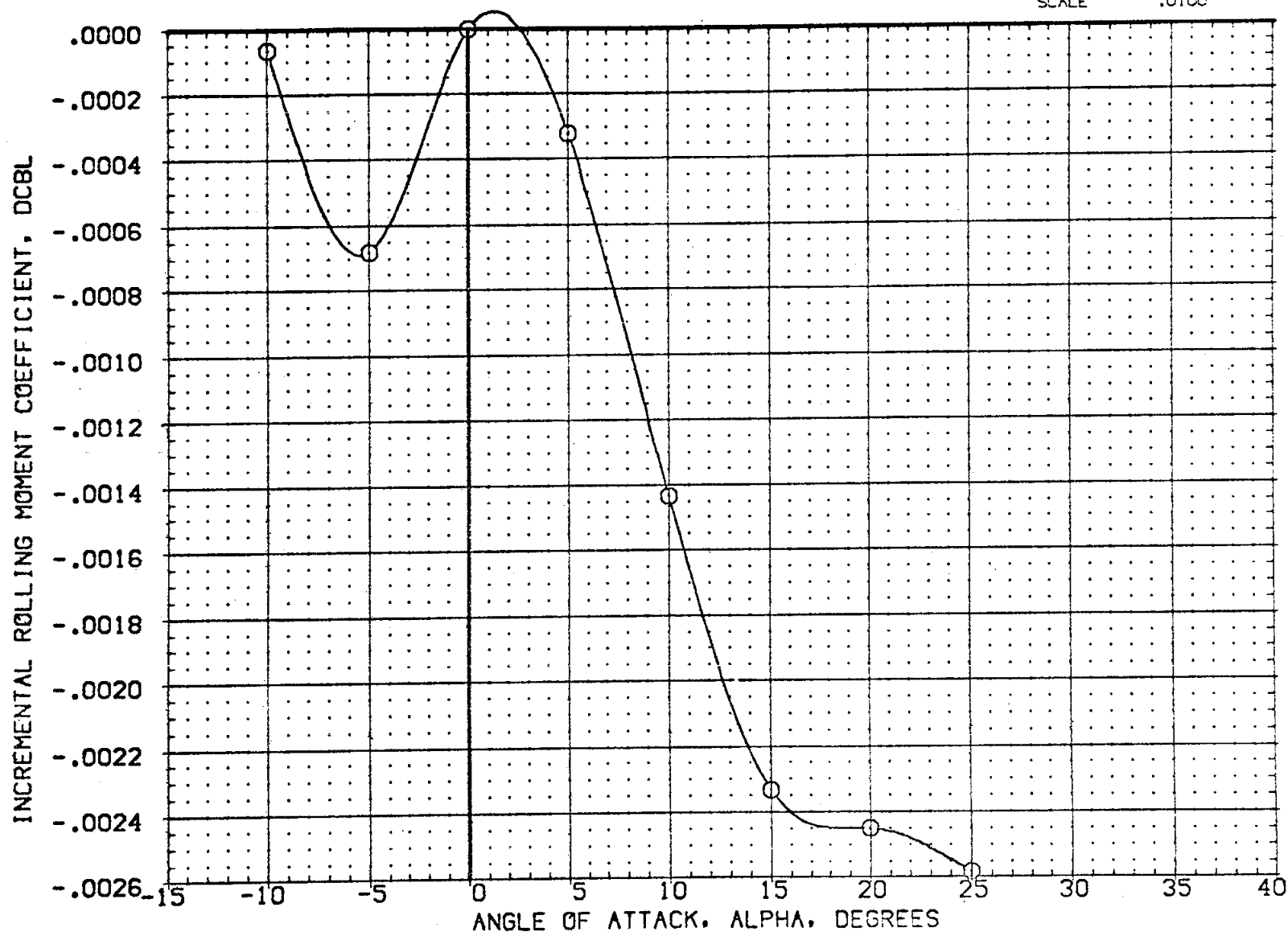


FIG 13 EFFECT OF BDflap DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2001) ○ 0A105 CFHT109 MODEL 32-0 (0)N51

YAW

BDFLAP 13.750 PCRC5 72.000 ELEVON .000 Q-SIM 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

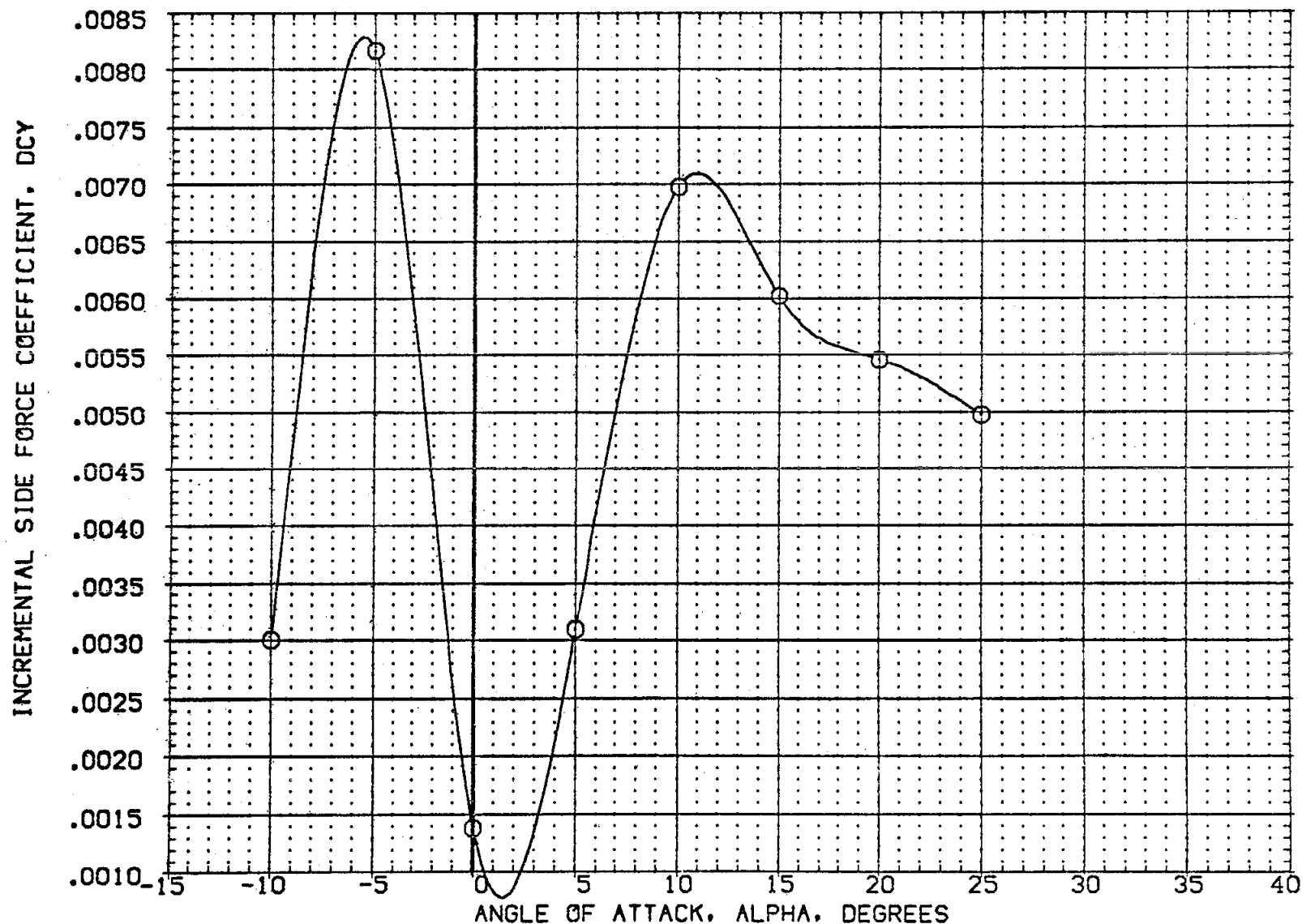


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	YAW	BDFLAP	PCRCSS	ELEVON	O-SIM	REFERENCE INFORMATION		
(ZH20IN)	0A105 CFHT109 MODEL 32-0 (0)N51	RCS OFF	13.750	72.000	.000	50.000	SREF	2690.0000	50. FT.
(ZH20IF)	0A105 CFHT109 MODEL 32 0(0) N51		13.750	.000	.000	.000	LREF	474.8100	IN.
							BREF	936.6800	IN.
							XMRP	1076.6700	IN. X0
							YMRP	.0000	IN. Y0
							ZMRP	375.0000	IN. Z0
							SCALE	.0100	

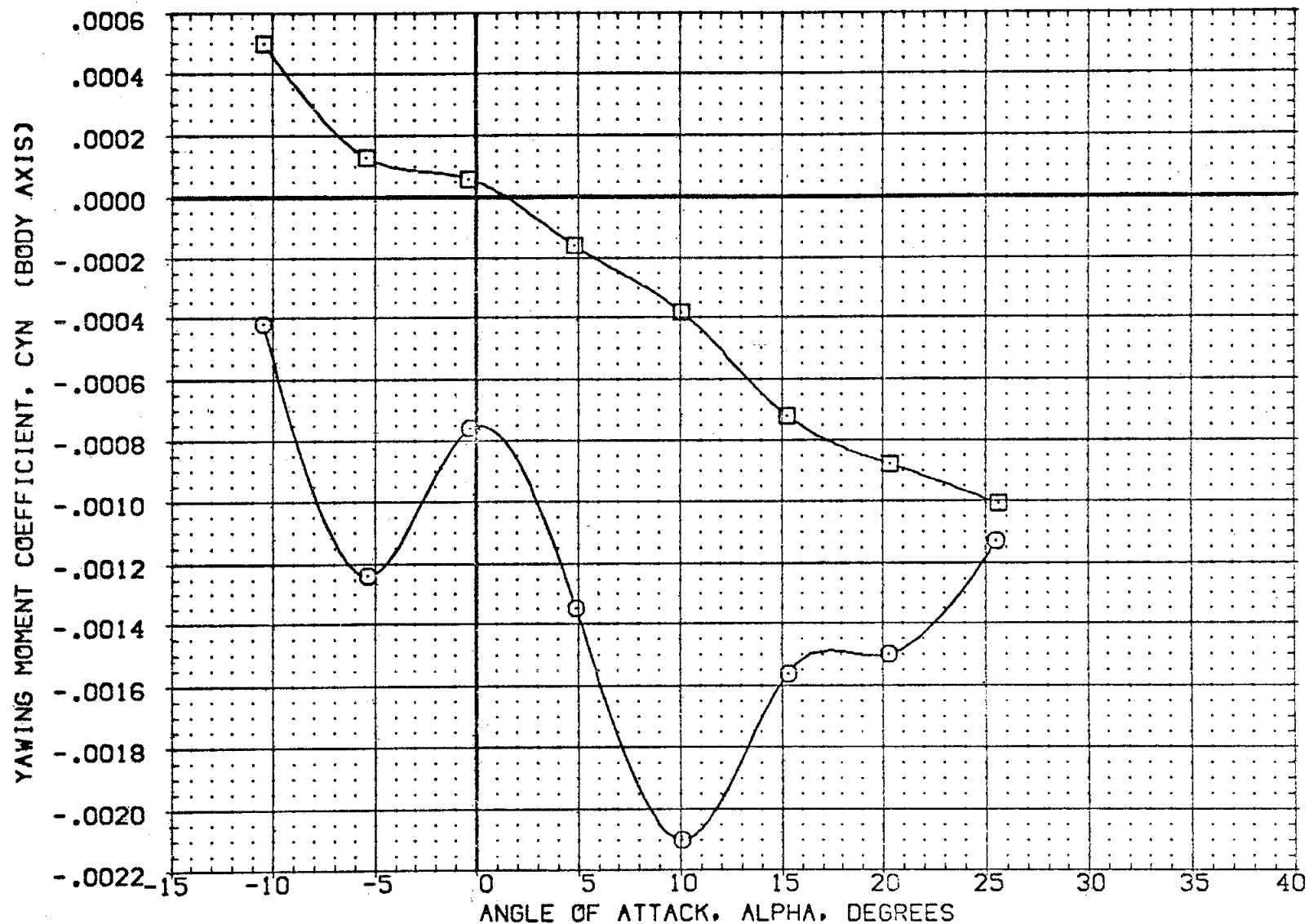


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	YAW	BDFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH201N)	0A105 CFHT109 MODEL 32-0 (0)NS1	YAW	13.750	72.000	.000	50.000	SREF 2690.0000 SQ.FT.
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) NS1	RCS OFF	13.750	.000	.000	.000	LREF 474.8100 IN.
							BREF 936.6800 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

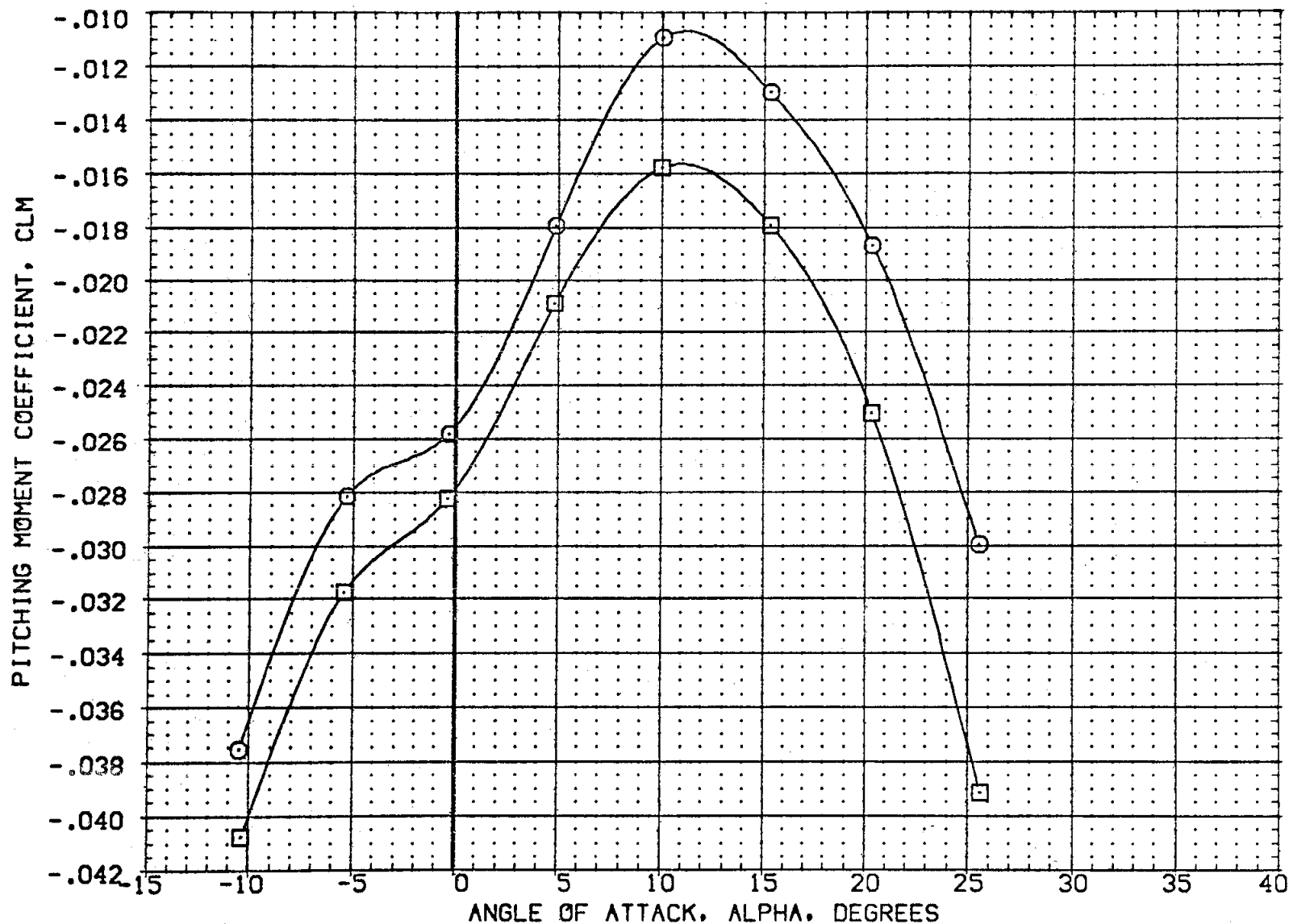


FIG 13 EFFECT OF BDFLAP DEFLECTION ON NS1 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (Z4201N) ☐ OA105 CFHT109 MODEL 32-0 (0)N51  
 (Z4201F) ☐ OA105 CFHT109 MODEL 32 0(0) N51

YAW  
RCS OFF

BDFLAP  
13.750  
13.750

PCRC5  
72.000  
.000

ELEVON  
.000  
.000

Q-SIM  
50.000  
.000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. XG  
 YMRP .0000 IN. YG  
 ZMRP 375.0000 IN. ZG  
 SCALE .0100

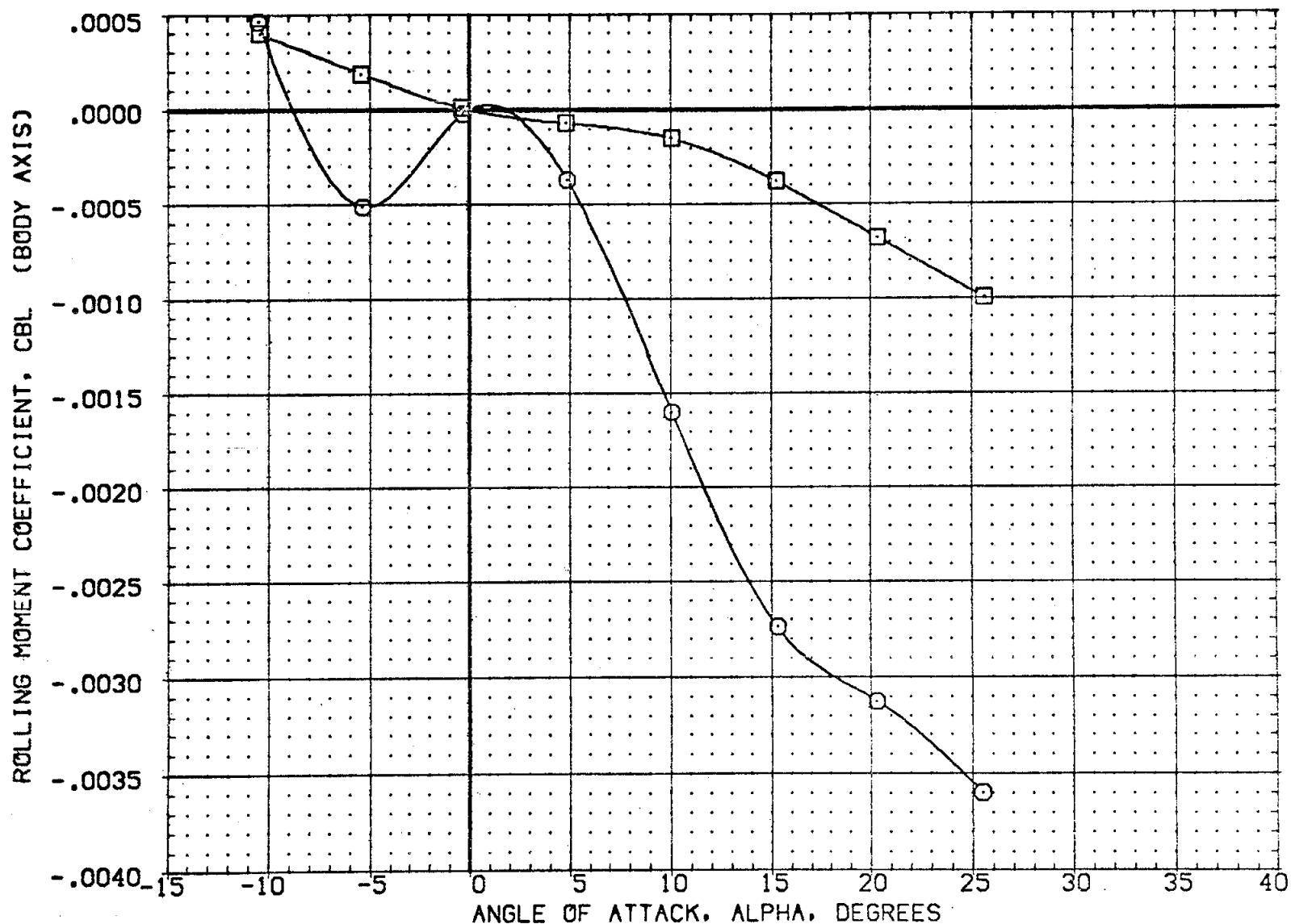


FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(ZH201N)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N51  
 (ZH201F)  $\square$  0A105 CFHT109 MODEL 32 0(0) N51

YAW  
RCS OFF

BDFLAP  
13.750  
13.750

PC RCS  
72.000  
.000

ELEVON  
.000  
.000

0-SIM  
50.000  
.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. XC  
 YMRP .0000 IN. YO  
 ZMRP 375.0000 IN. ZO  
 SCALE .0100

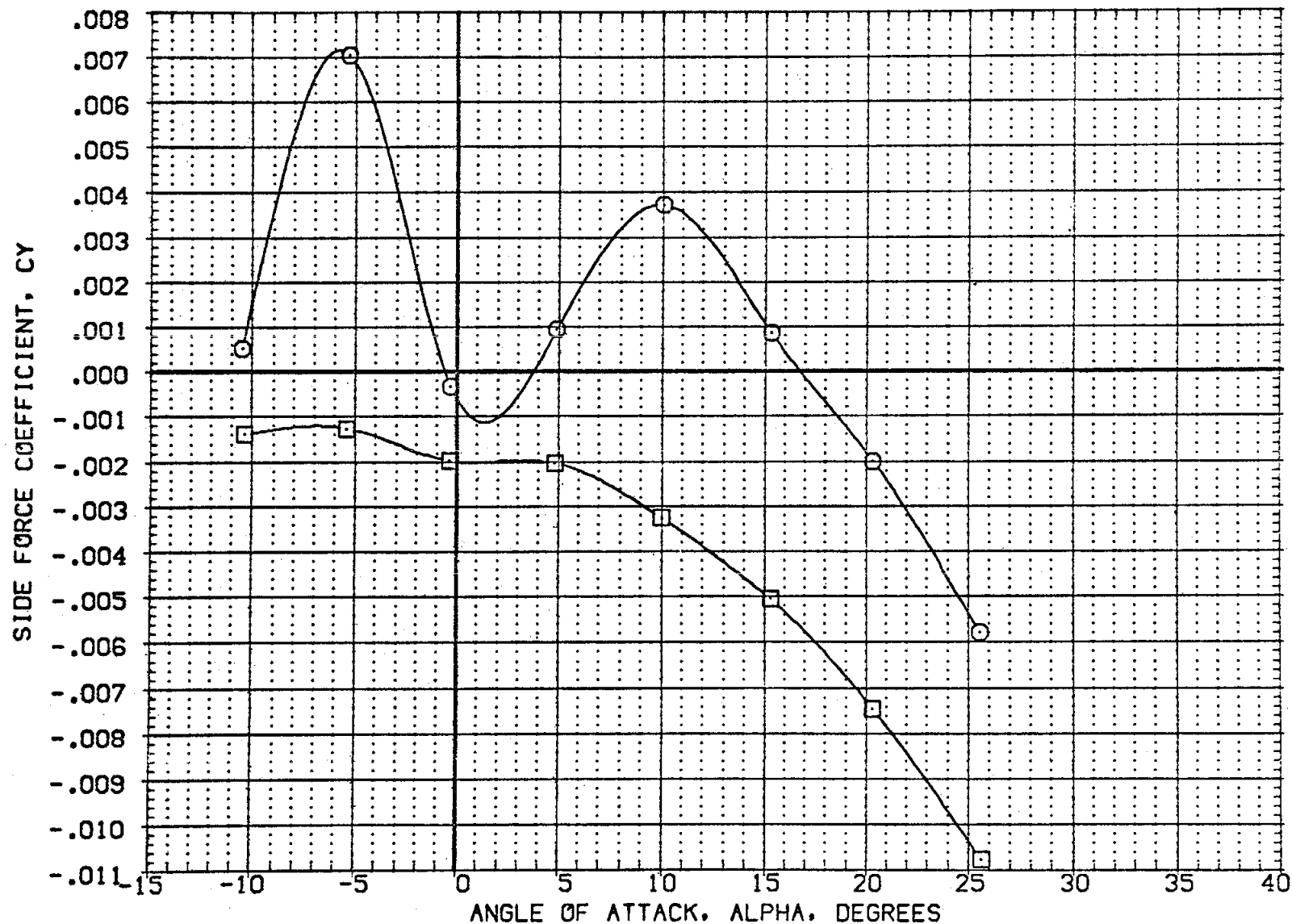




FIG 13 EFFECT OF BDFLAP DEFLECTION ON N51 RCS JET INTERACTION, BETA = 0  
 (A) MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2028)  0A105 CFHT109 MODEL 32-0 (0)N49  
(CH2024)  0A105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN -20.000 446.000 7.000 .000  
PITCH DOWN .000 446.000 7.000 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. XO  
YMRP .0000 IN. YO  
ZMRP 375.0000 IN. ZO  
SCALE .0100

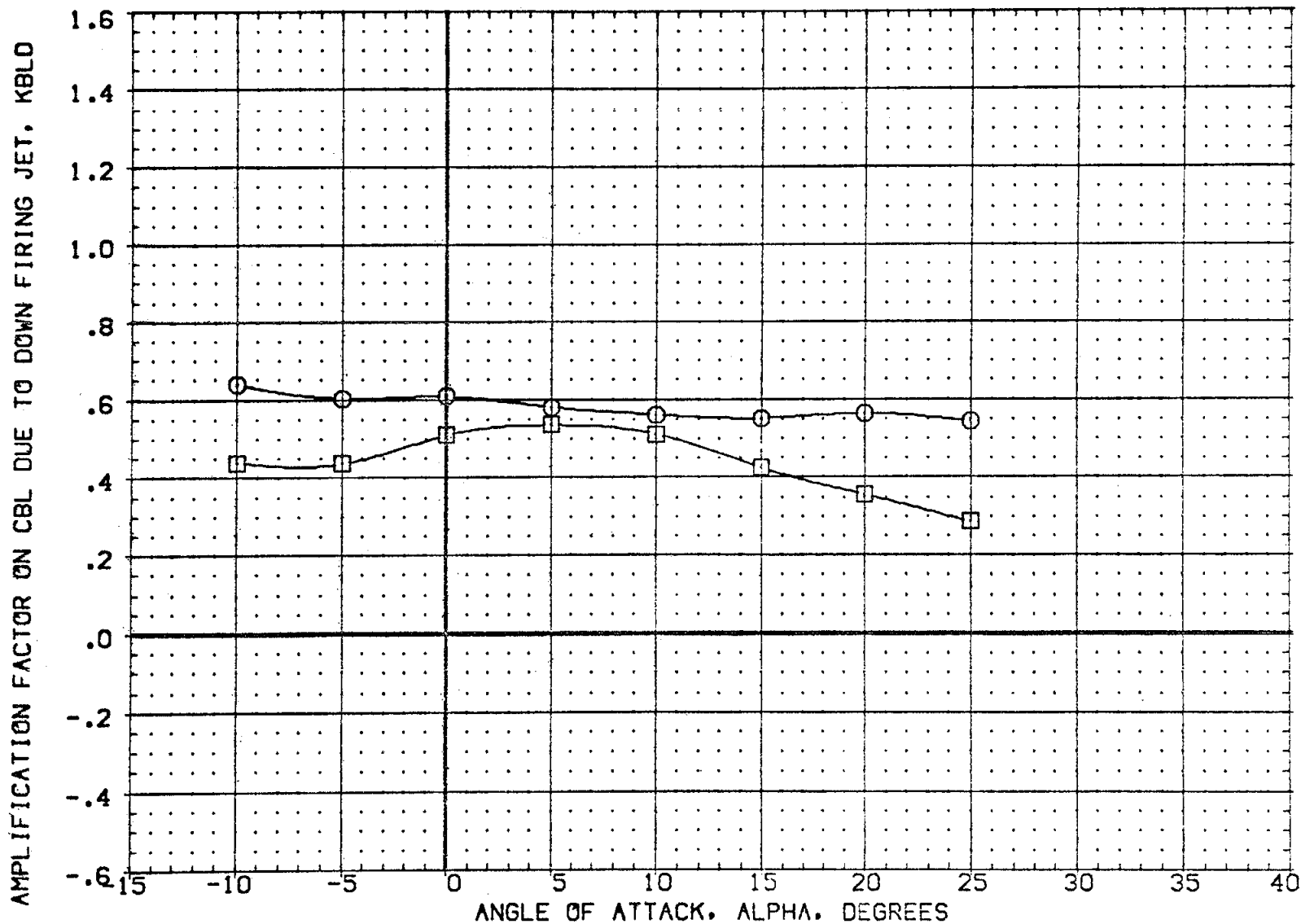


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	G-SIM	BOFLAP	REFERENCE INFORMATION		
(CH2028)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-20.000	446.000	7.000	SREF	2690.0000	SG.FT.
(CH2024)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	7.000	LREF	474.8100	IN.
						BREF	936.6800	IN.
						XMRP	1076.6700	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	

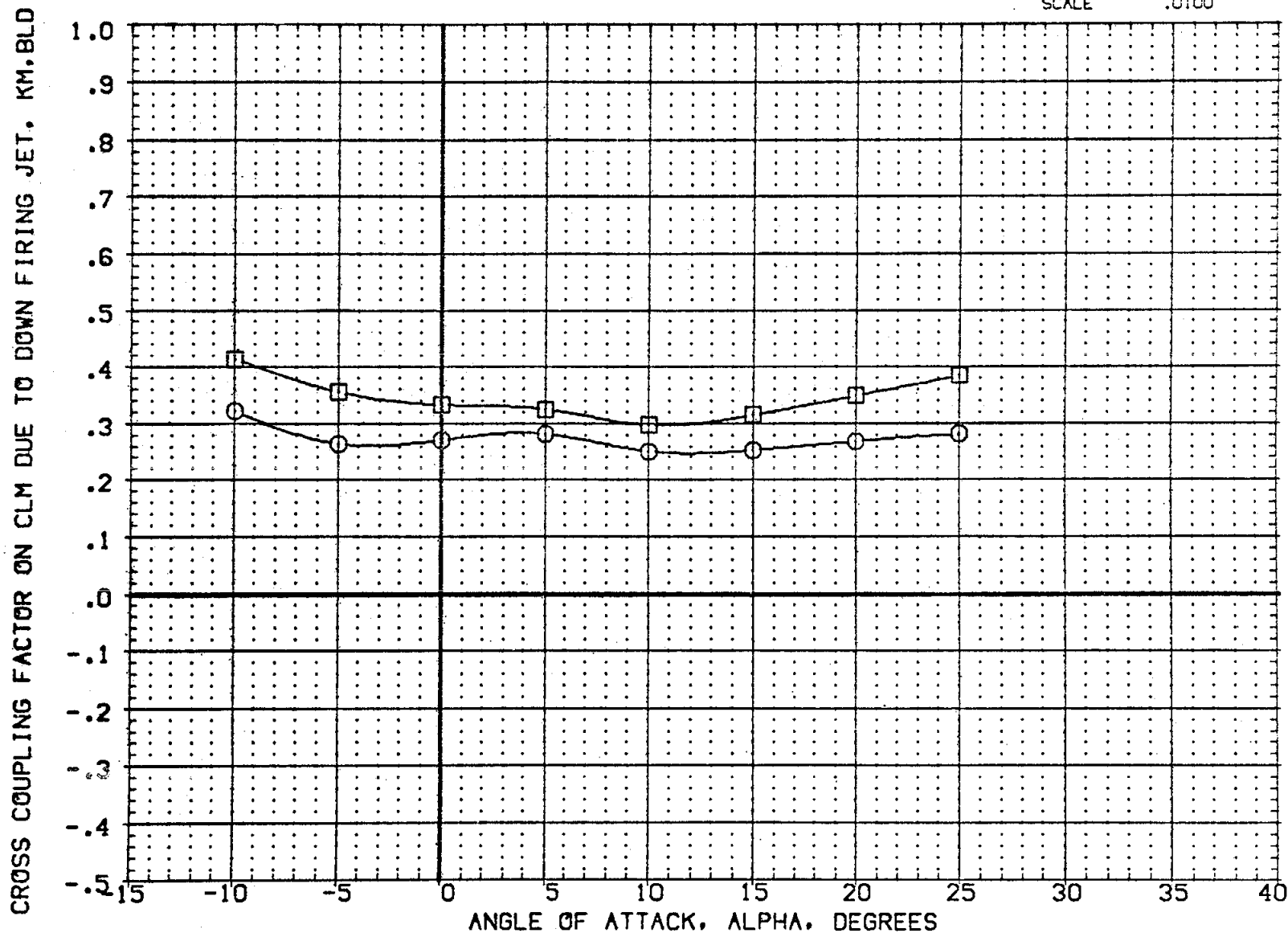




FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2028)  0A105 CFHT109 MODEL 32-0 (0)N49  
(CH2024)  0A105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN -20.000 446.000 7.000 .000  
PITCH DOWN .000 446.000 7.000 .000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6900 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

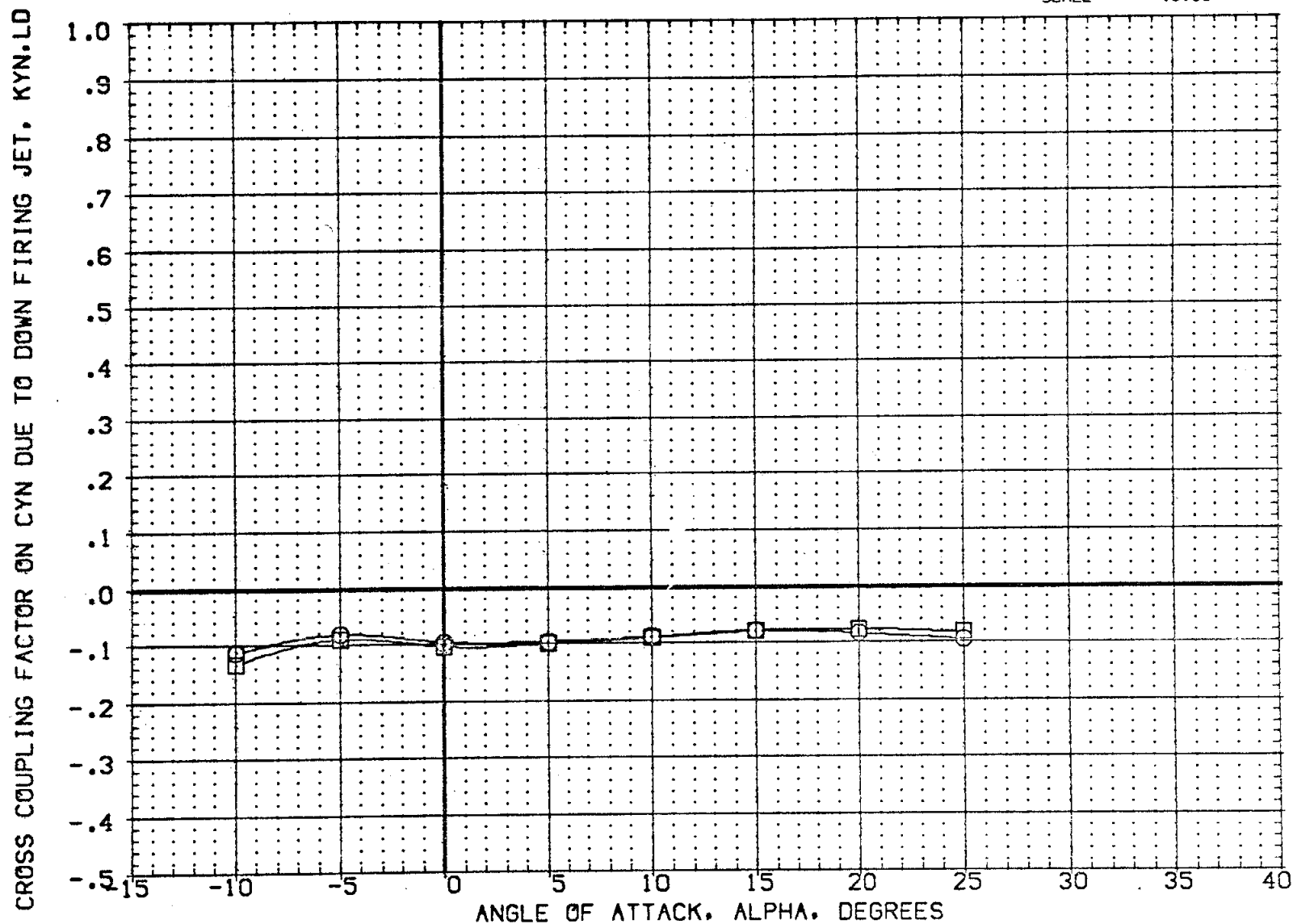


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2028)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N49  
 (CH2024)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN  
 PITCH DOWN

ELEVON PCRC5 Q-SIM BOFLAP  
 -20.000 446.000 7.000 .000  
 .000 446.000 7.000 .000

REFERENCE INFORMATION  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100

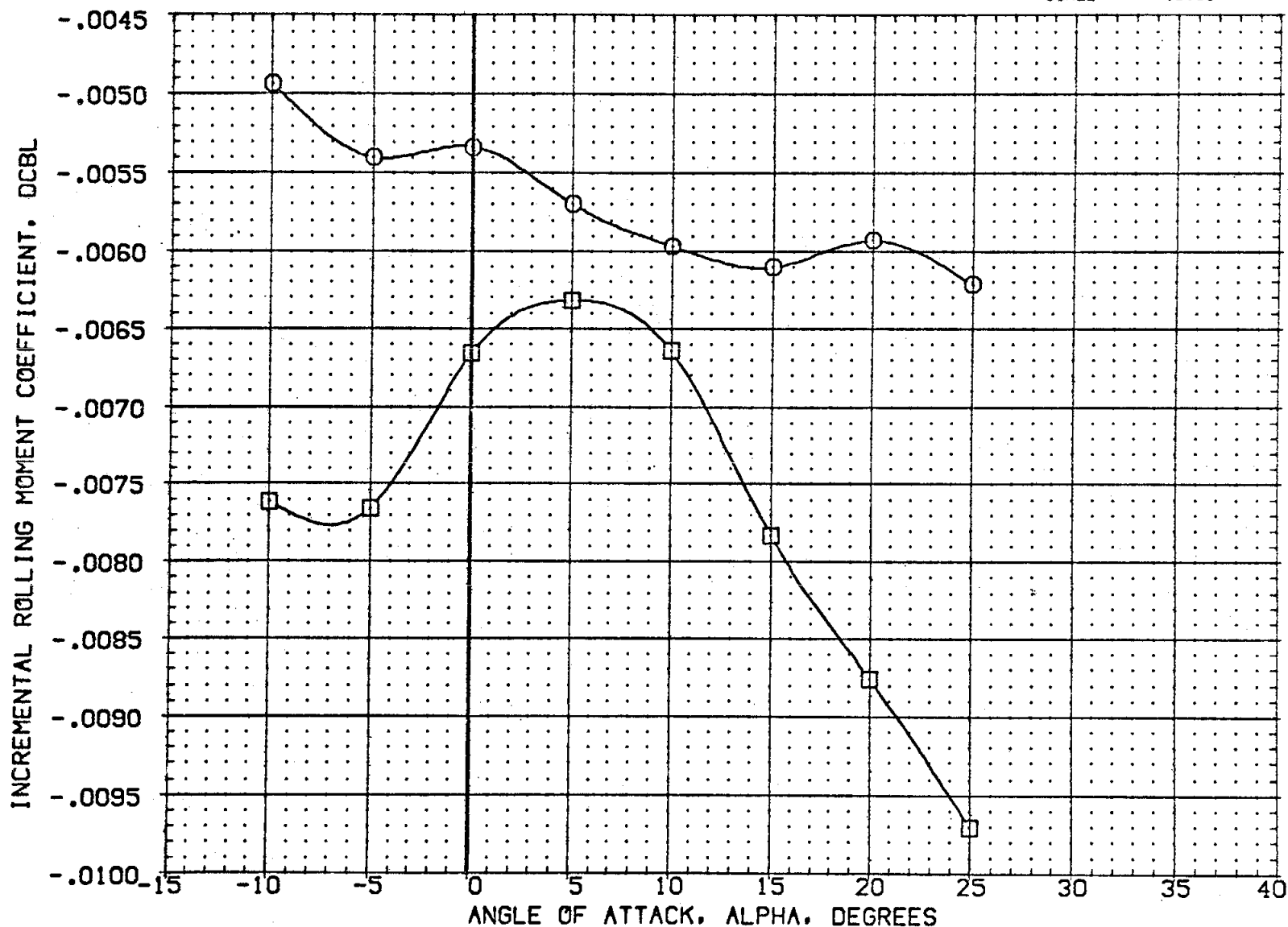


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(CH2028) ☐ OA105 CFHT109 MODEL 32-0 (0)N49  
 (CH2024) ☐ OA105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN  
 PITCH DOWN

ELEVON -20.000 446.000 7.000 .000  
 PCRS 446.000 7.000 .000

Q-SIM BOFLAP  
 SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. XO  
 YMRP .0000 IN. YO  
 ZMRP 375.0000 IN. ZO  
 SCALE .0100

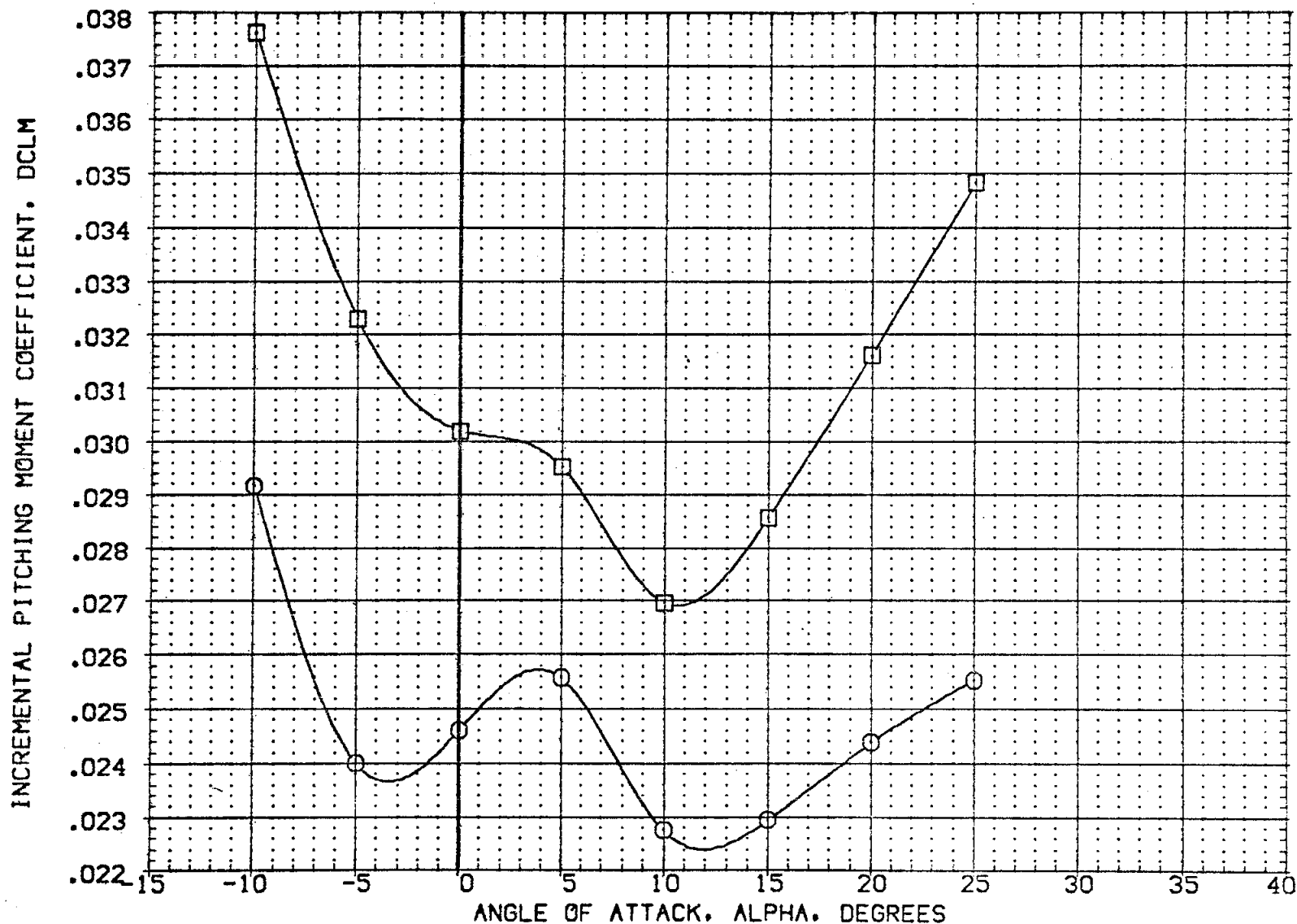


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

AMACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION	
(CH2028)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-20.000	446.000	7.000	SREF	2690.0000 SQ.FT.
(CH2024)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	7.000	LREF	474.8100 IN.
						BREF	936.6800 IN.
						XMRP	1076.6700 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

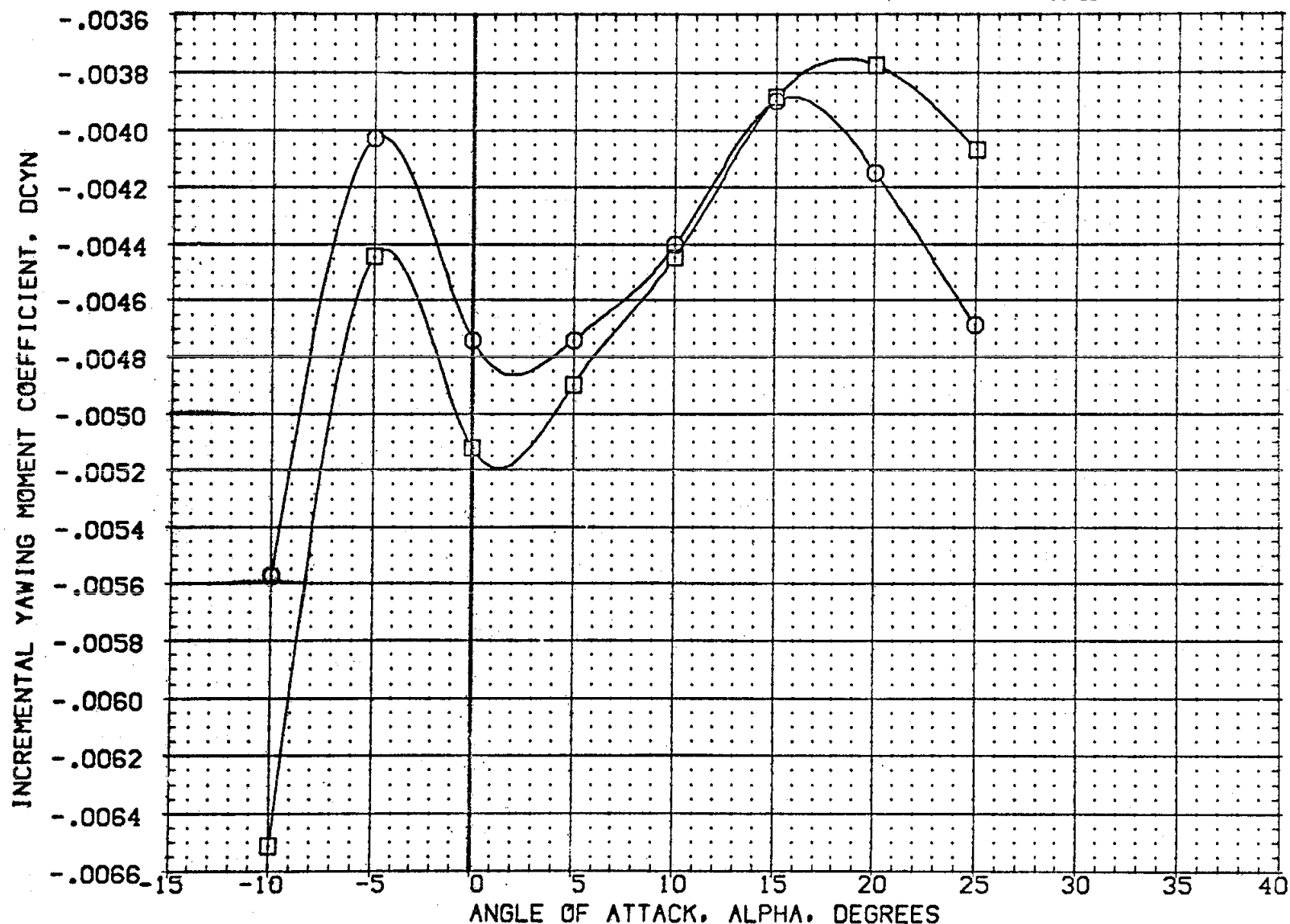


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRC	Q-SIM	BOFLAP	REFERENCE INFORMATION
(ZH228N)	OA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-20.000	446.000	7.000	.000 SREF 2690.0000 SQ.FT.
(ZH224N)	OA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	7.000	.000 LREF 474.8100 IN.
(ZH206F)	OA105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-20.000	.000	.000	.000 BREF 936.6800 IN.
(ZH203F)	OA105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	.000 XMRP 1076.6700 IN. XO
						.000 YMRP .0000 IN. YO
						.000 ZMRP 375.0000 IN. ZO
						SCALE .0100

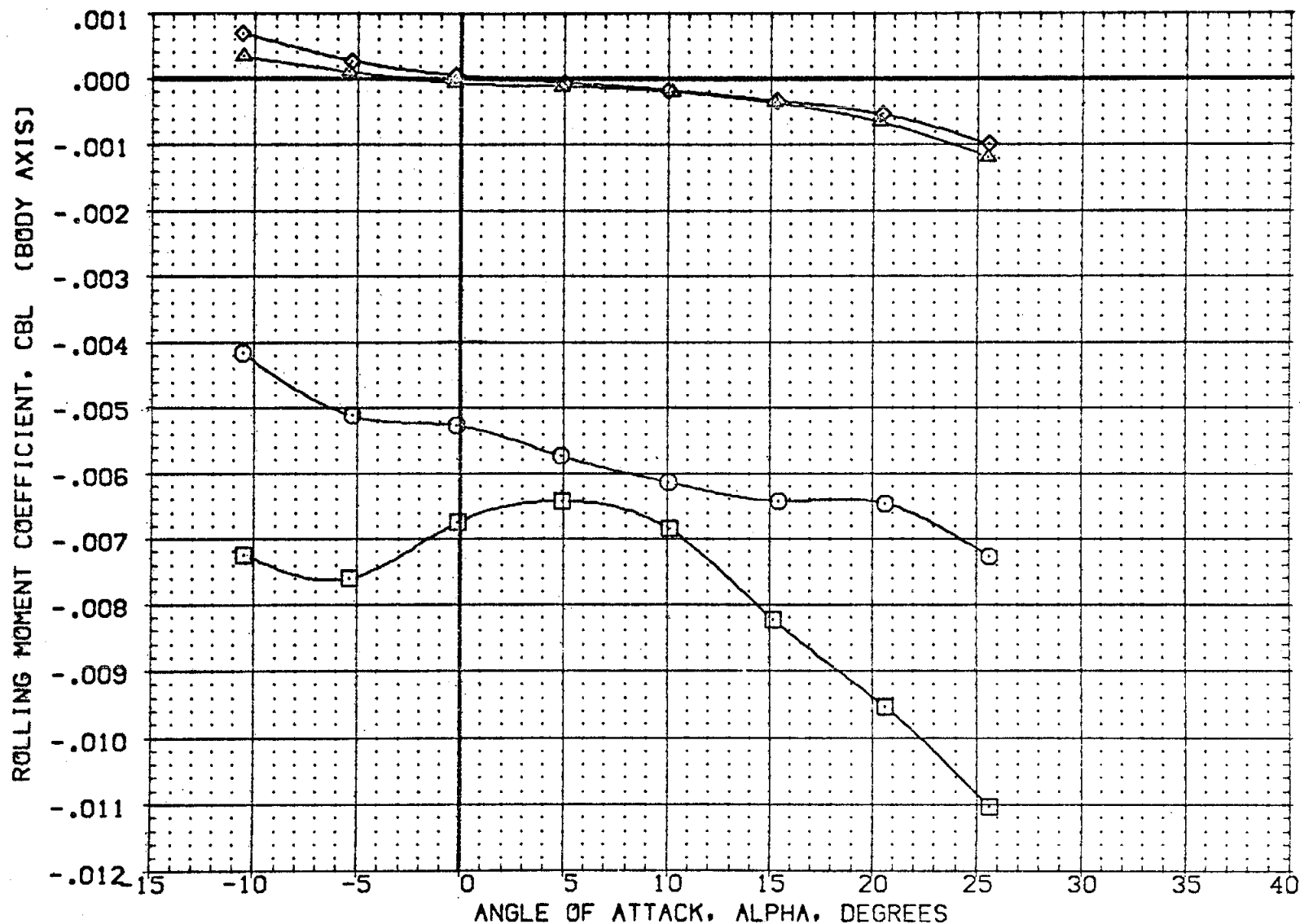


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION		
(ZH228N)	OA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-20.000	446.000	7.000	.000	SREF	2690.0000 SQ.FT.
(ZH224N)	OA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	7.000	.000	LREF	474.8100 IN.
(ZH206F)	OA105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-20.000	.000	.000	.000	BREF	936.6800 IN.
(ZH203F)	OA105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	.000	XMRP	1076.6700 IN. XC
							YMRP	.0000 IN. YC
							ZMRP	375.0000 IN. ZC
							SCALE	.0100

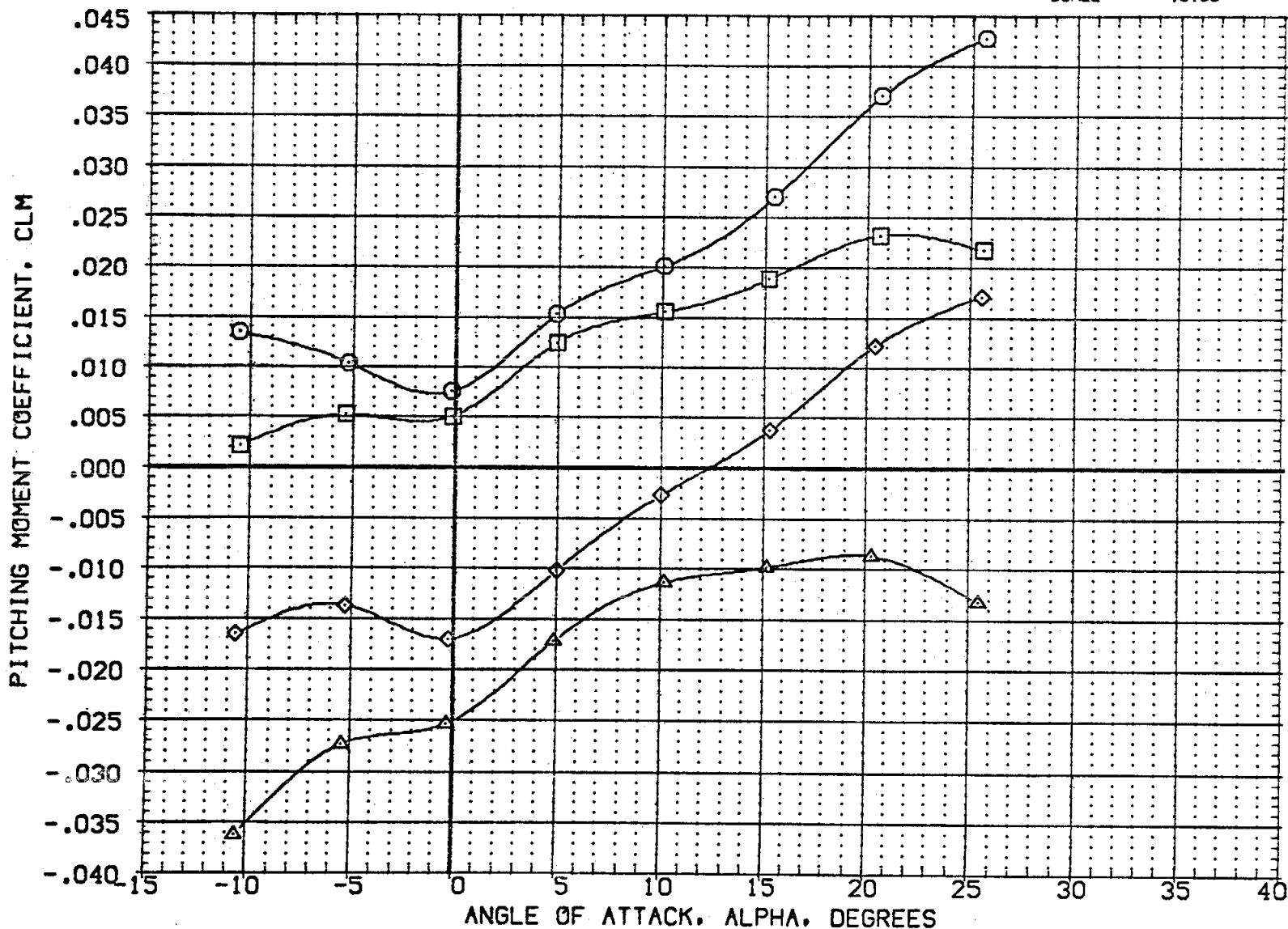


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION	
(Z4228N)	OA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-20.000	446.000	7.000	SREF	2690.0000 SQ.FT.
(Z4224N)	OA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	7.000	LREF	474.8100 IN.
(Z4206F)	OA105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-20.000	.000	.000	BREF	936.6800 IN.
(Z4203F)	OA105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	XMRP	1076.6700 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

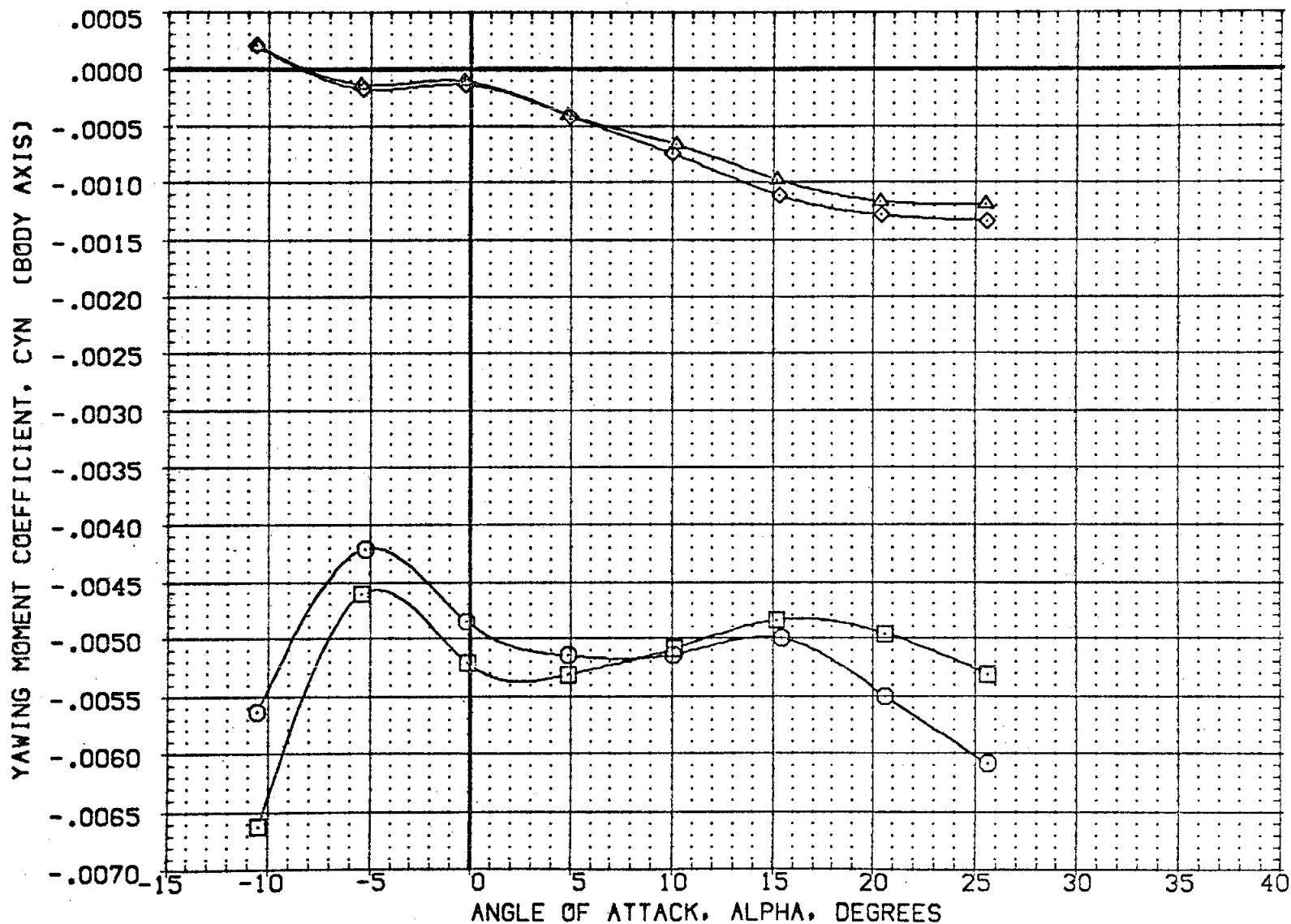


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2025) ○ 0A105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN ELEVON PCRC5 Q-SIM BOFLAP  
.000 158.000 20.000 .000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

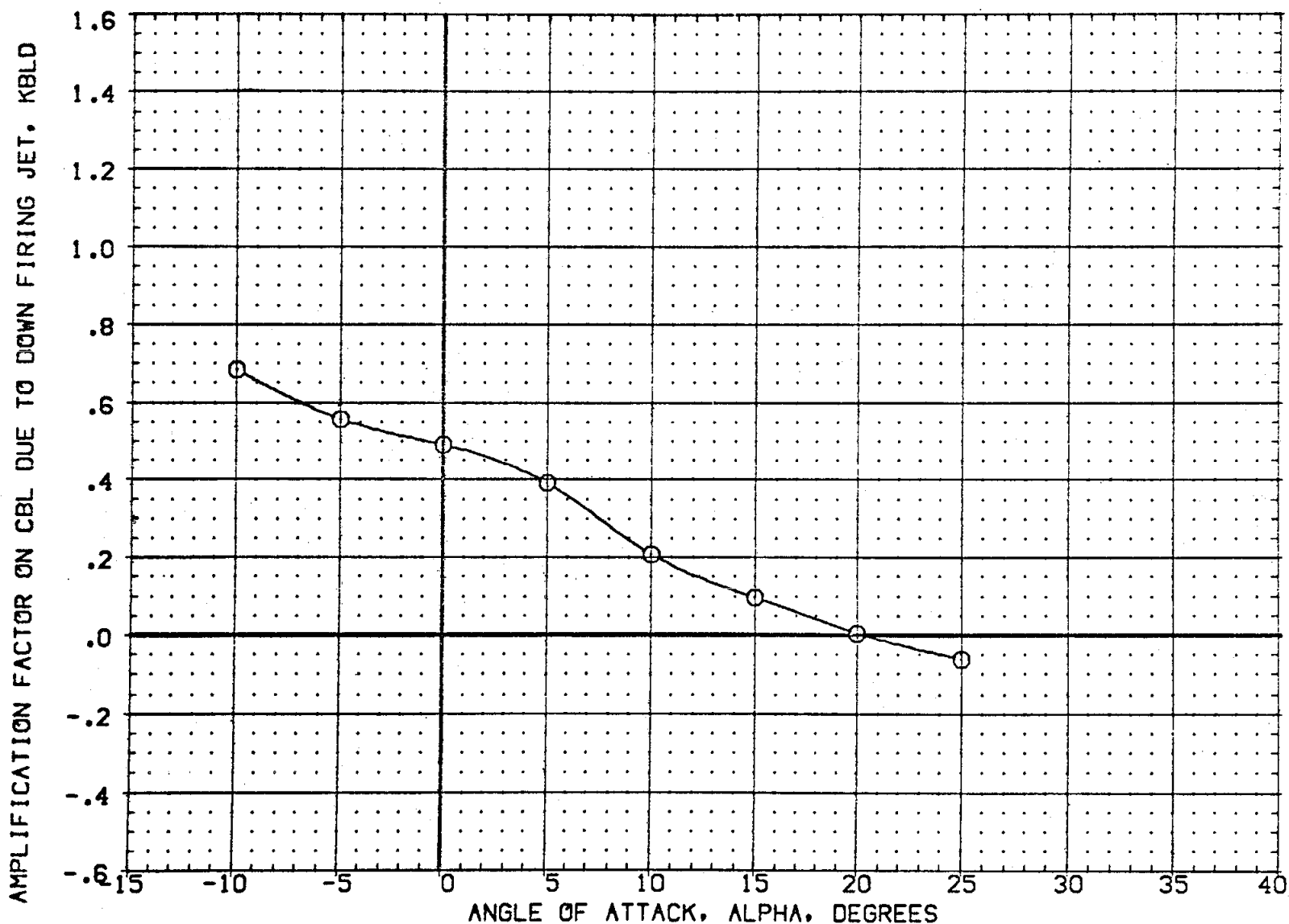


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2025) ○ 0A105 CFHT109 MODEL 32-0 (B)N49

PITCH DOWN ELEVON PCRC5 Q-SIM BOFLAP  
.000 158.000 20.000 .000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. XO  
YMRP .0000 IN. YO  
ZMRP 375.0000 IN. ZO  
SCALE .0100

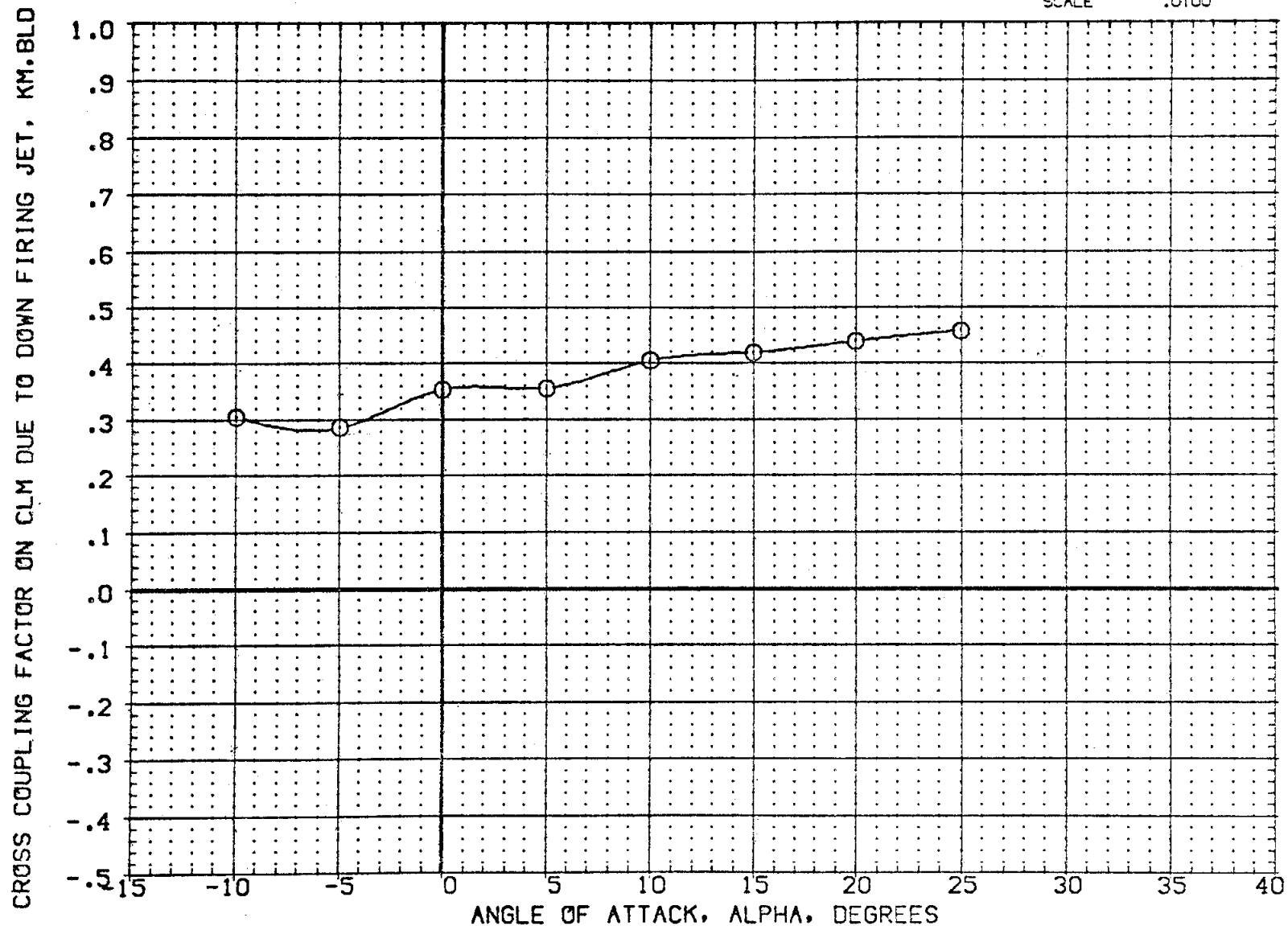


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2025) ○ 0A105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN

ELEVON .000  
PCRC 158.000  
G-SIM 20.000  
BOFLAP .000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

CROSS COUPLING FACTOR ON CYN DUE TO DOWN FIRING JET. KYN.LD

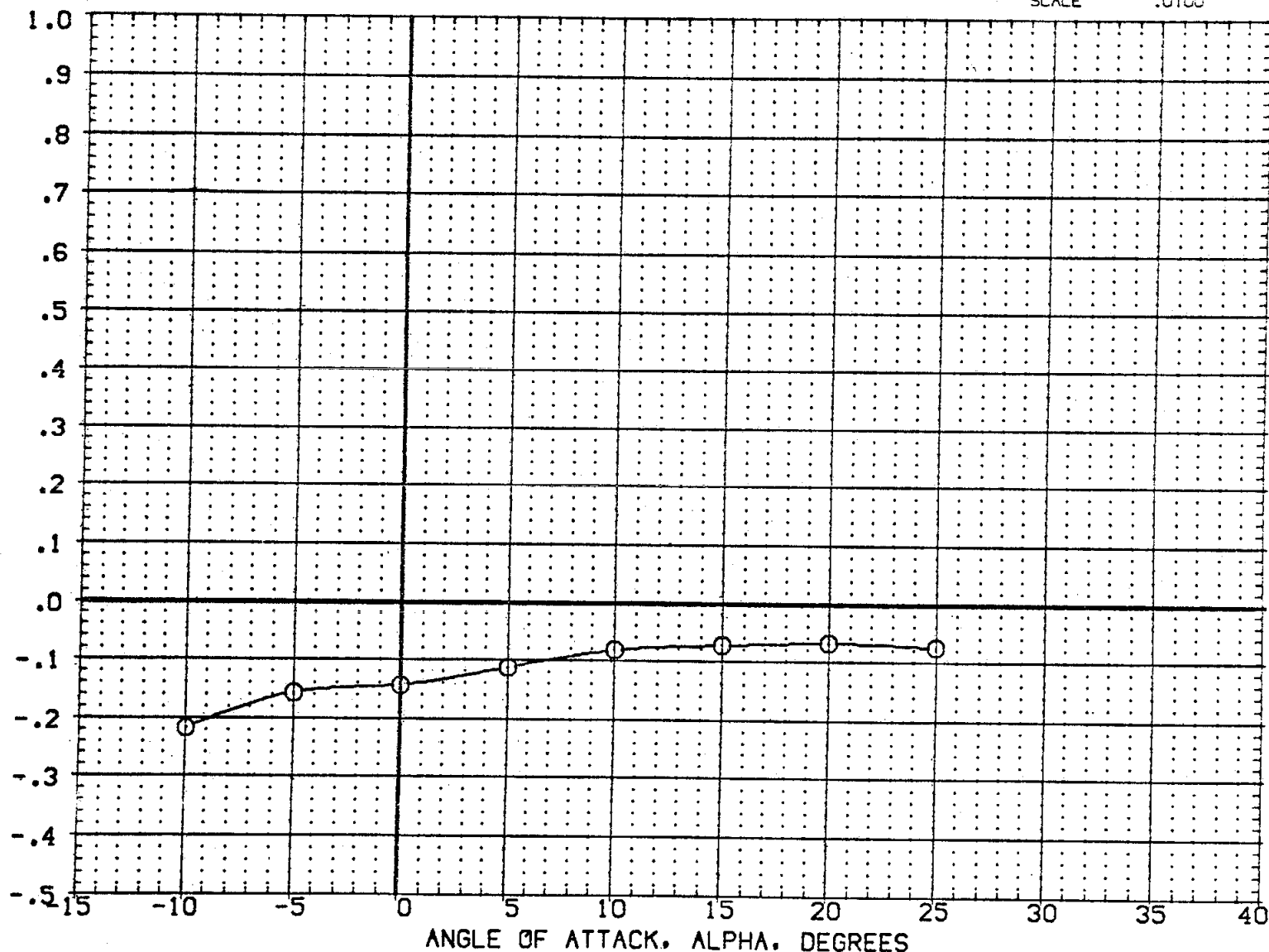


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

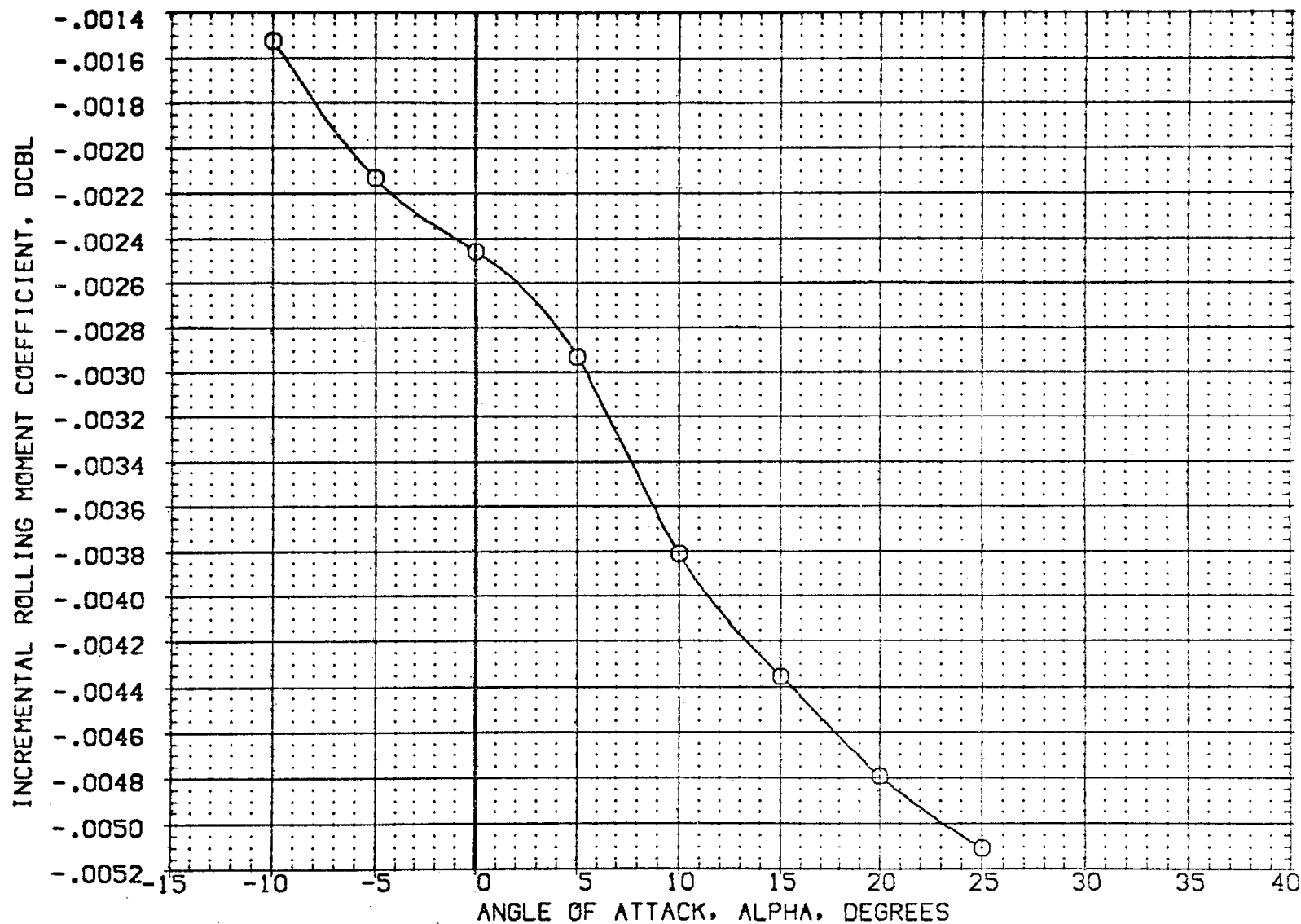


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2025) ○ 0A105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN  
ELEVON .000 PCRC5 158.000 0-SIM 20.000 BOFLAP .000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

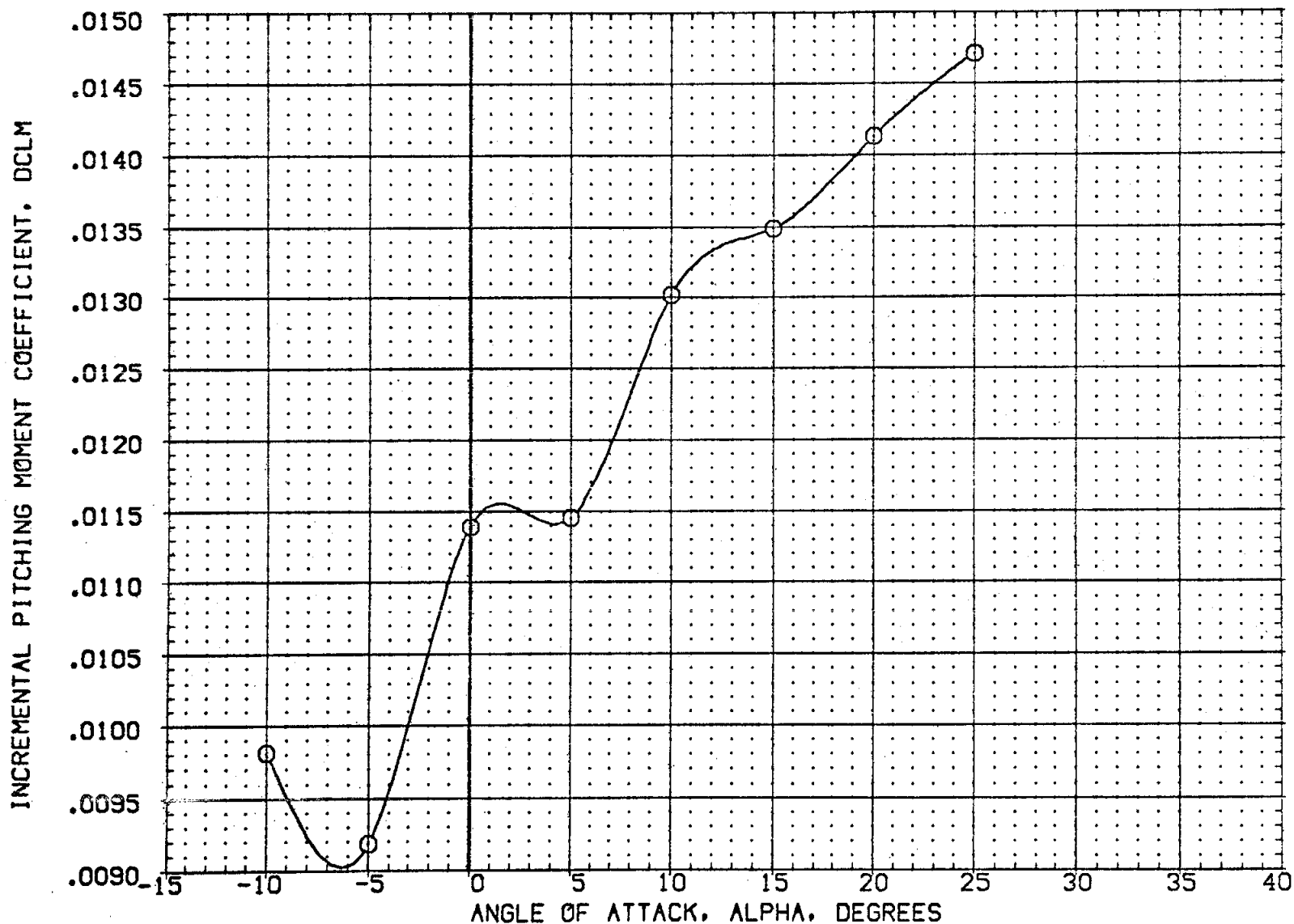


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2025) ○ BA105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN

ELEVON PCRC5 Q-SIM BOFLAP  
.000 158.000 20.000 .000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. X0  
YMRP .0000 IN. Y0  
ZMRP 375.0000 IN. Z0  
SCALE .0100

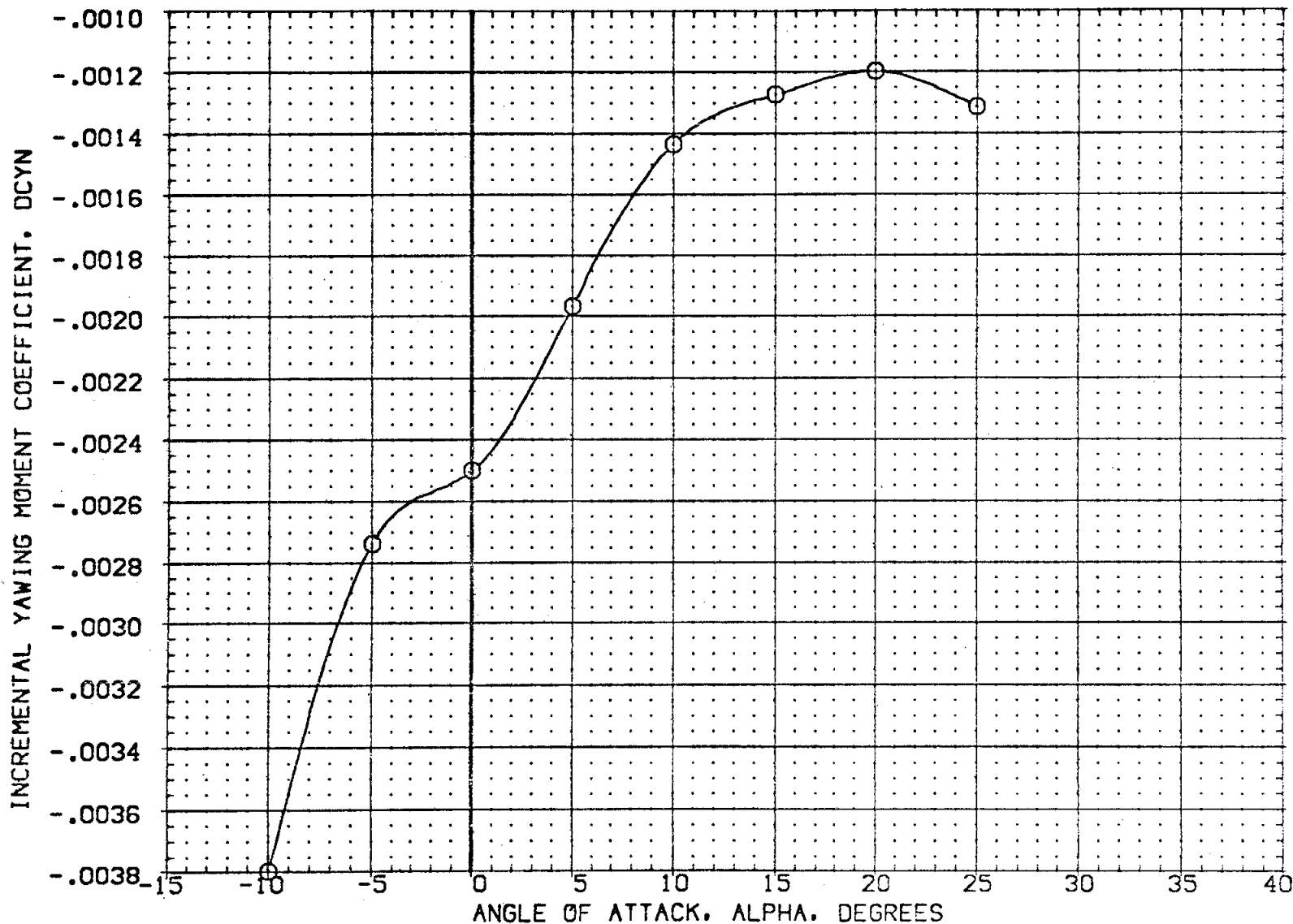


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRS	Q-SIM	BOFLAP	REFERENCE INFORMATION
(ZH225N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN .000	158.000	20.000	.000	SREF 2690.0000 SQ.FT.
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF .000	.000	.000	.000	LREF 474.8100 IN.
						BREF 936.6800 IN.
						XMRP 1076.6700 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

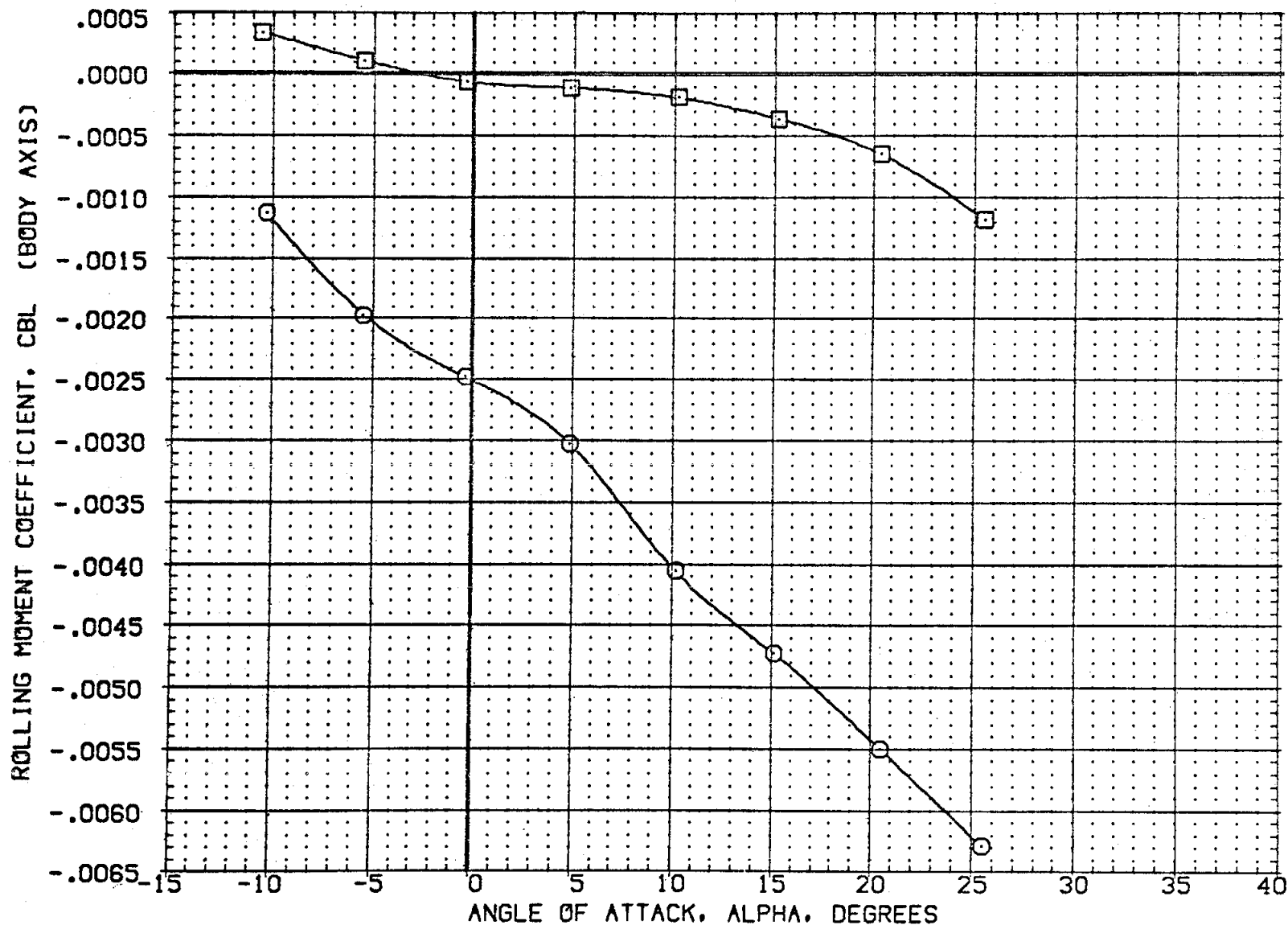


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PCRCS	Q-SIM	BDFLAP	REFERENCE INFORMATION		
(Z4225N)	CA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	20.000	SREF	2690.0000	SQ.FT.
(Z4203F)	CA105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	LREF	474.8100	IN.
						BREF	936.6800	IN.
						XMRP	1076.6700	IN. XC
						YMRP	.0000	IN. YO
						ZMRP	375.0000	IN. ZO
						SCALE	.0100	

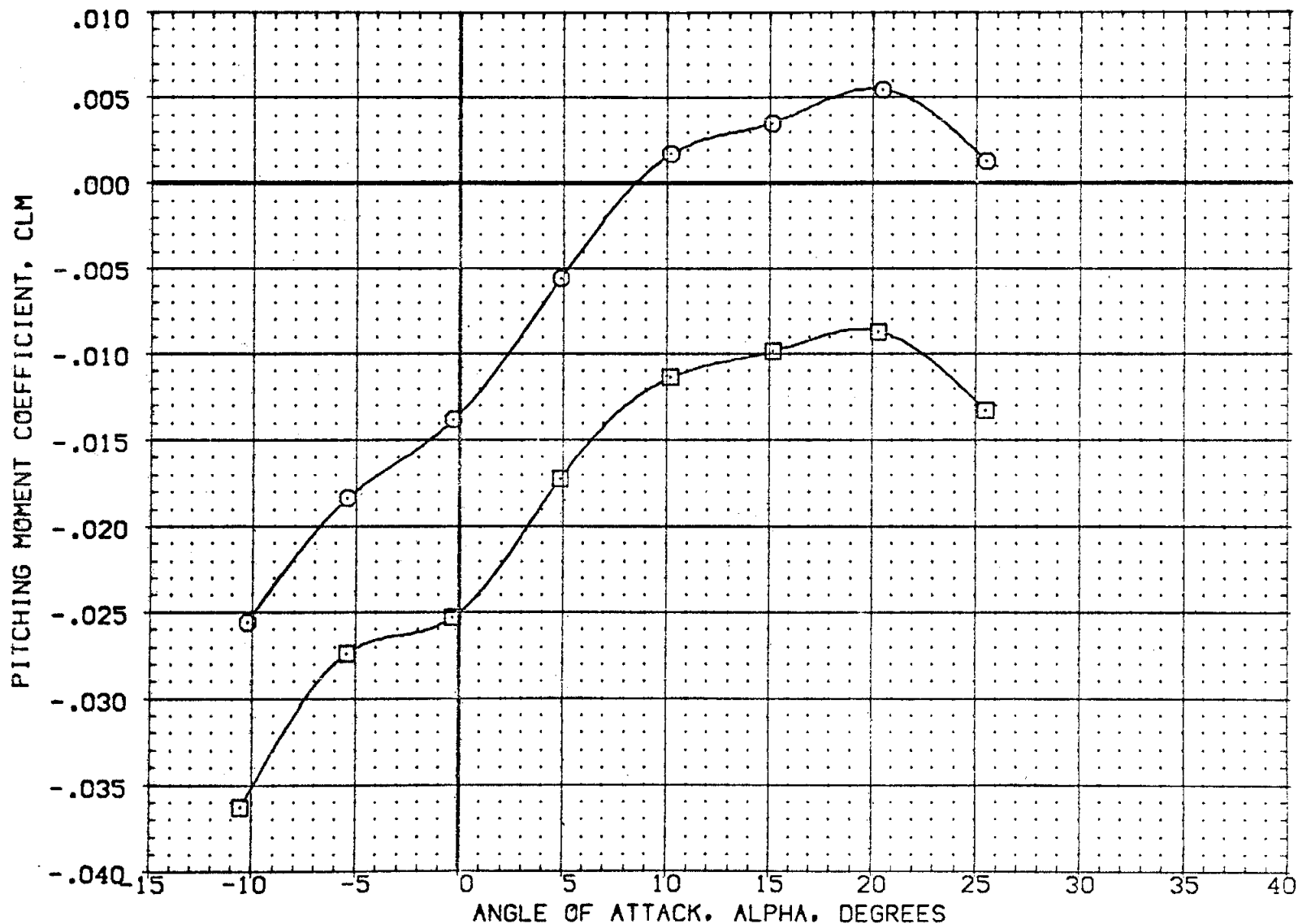


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	PC RCS	Q-SIM	BOFLAP	REFERENCE INFORMATION
(ZH225N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	20.000	.000
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N49	RCS OFF	.000	.000	.000	.000
						SREF 2690.0000 SQ.FT.
						LREF 474.8100 IN.
						BREF 936.6800 IN.
						XMRP 1076.6700 IN. XO
						YMRP .0000 IN. YO
						ZMRP 375.0000 IN. ZO
						SCALE .0100

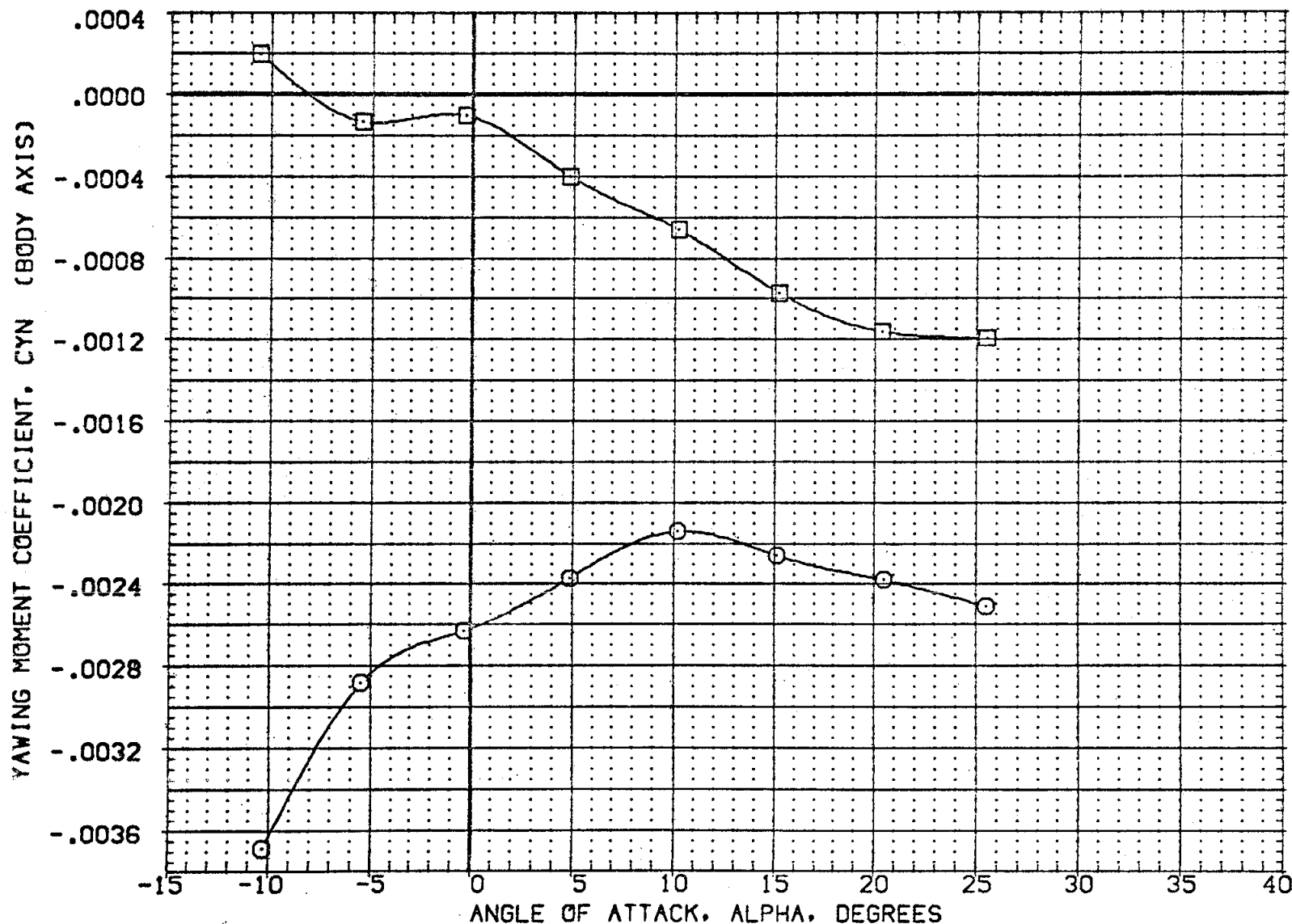


FIG 14 EFFECT OF ELEVON DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2016)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(CH2024)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	.000	7.000	LREF 474.8100 IN.
(CH2009)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	446.000	.000	7.000	BREF 936.6200 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

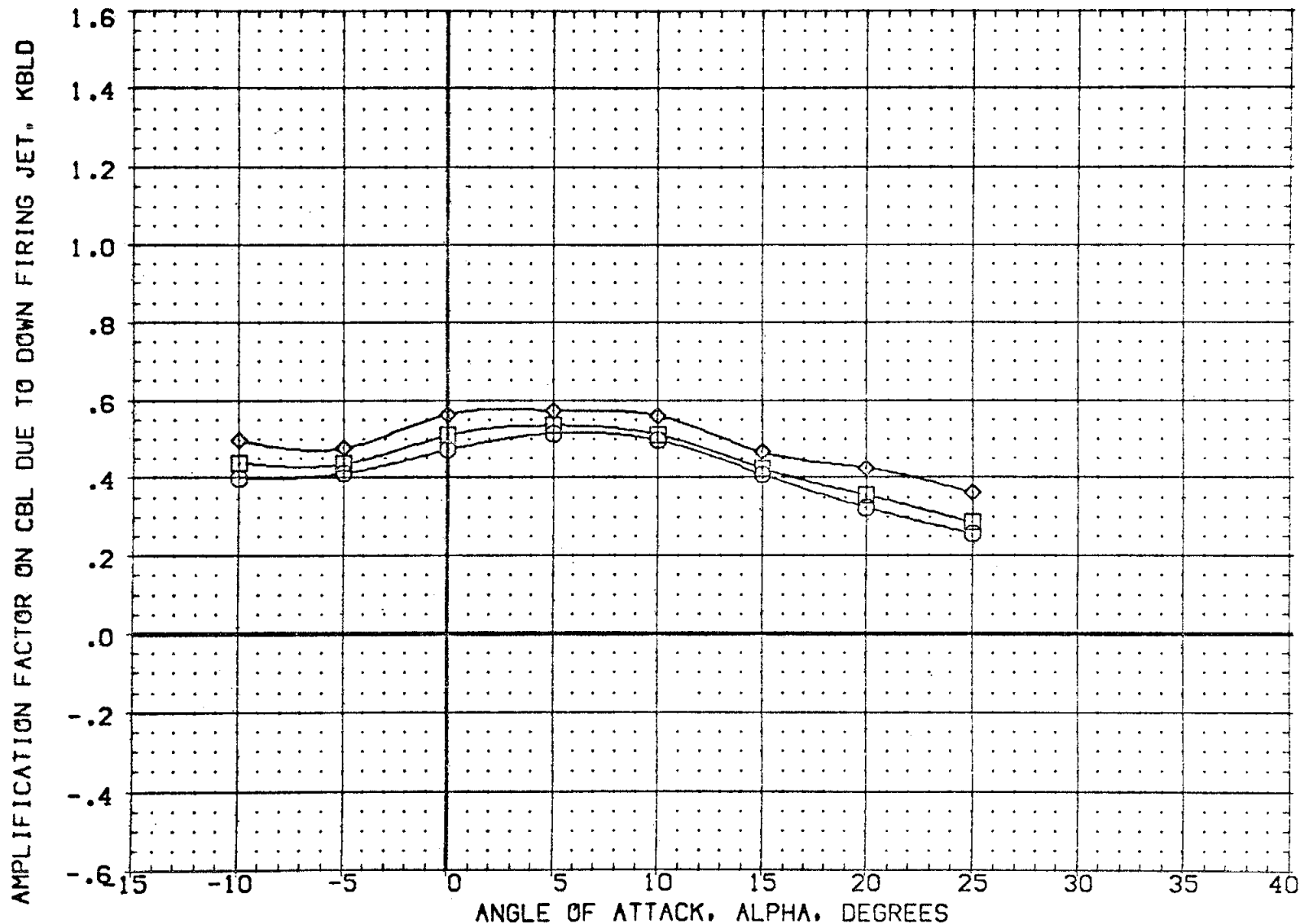


FIG 15 EFFECT OF BDFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2016)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(CH2024)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	.000	7.000	LREF 474.8100 IN.
(CH2009)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	446.000	.000	7.000	BREF 936.6800 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

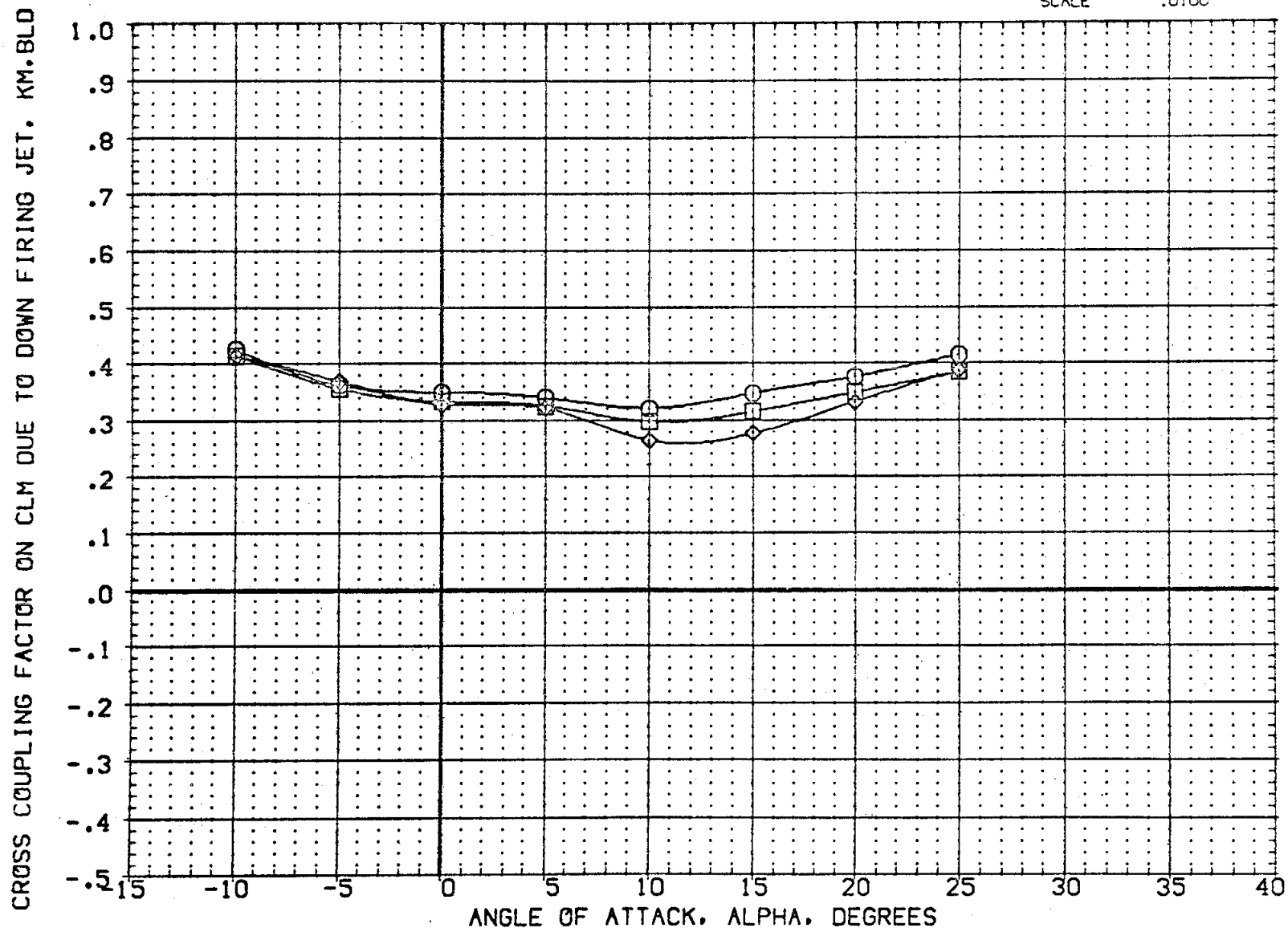


FIG 15 EFFECT OF BDFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCPCS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2016)	BA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	446.000	.000	7.000	SREF	2690.0000 SQ.FT.
(CH2024)	BA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	.000	7.000	LREF	474.8100 IN.
(CH2009)	BA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	446.000	.000	7.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. XO
							YMRP	.0000 IN. YO
							ZMRP	375.0000 IN. ZO
							SCALE	.0100

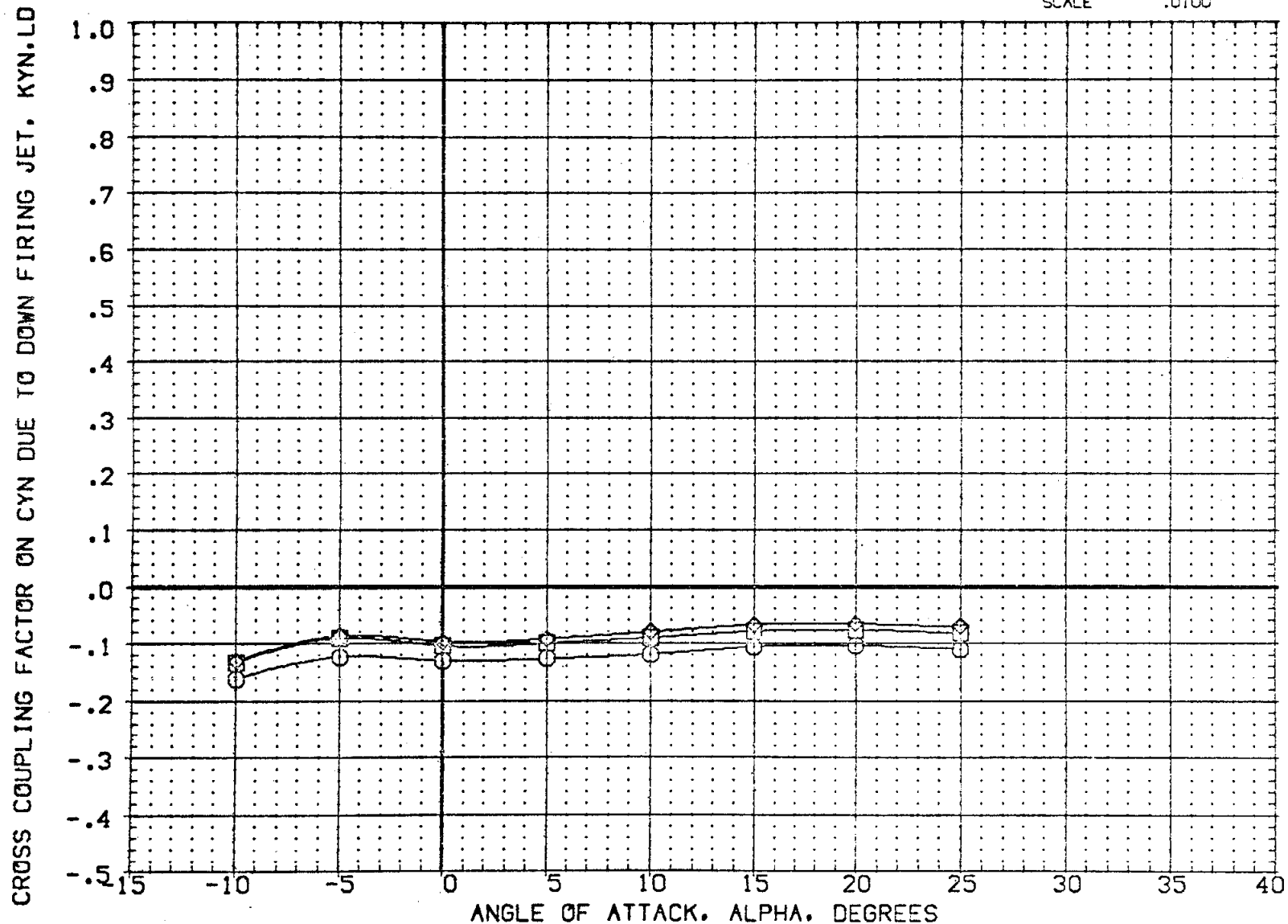


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2016)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	446.000	.000	7.000	SREF	2690.0000 SQ.FT.
(CH2024)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	.000	7.000	LREF	474.8100 IN.
(CH2009)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	446.000	.000	7.000	BREF	935.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

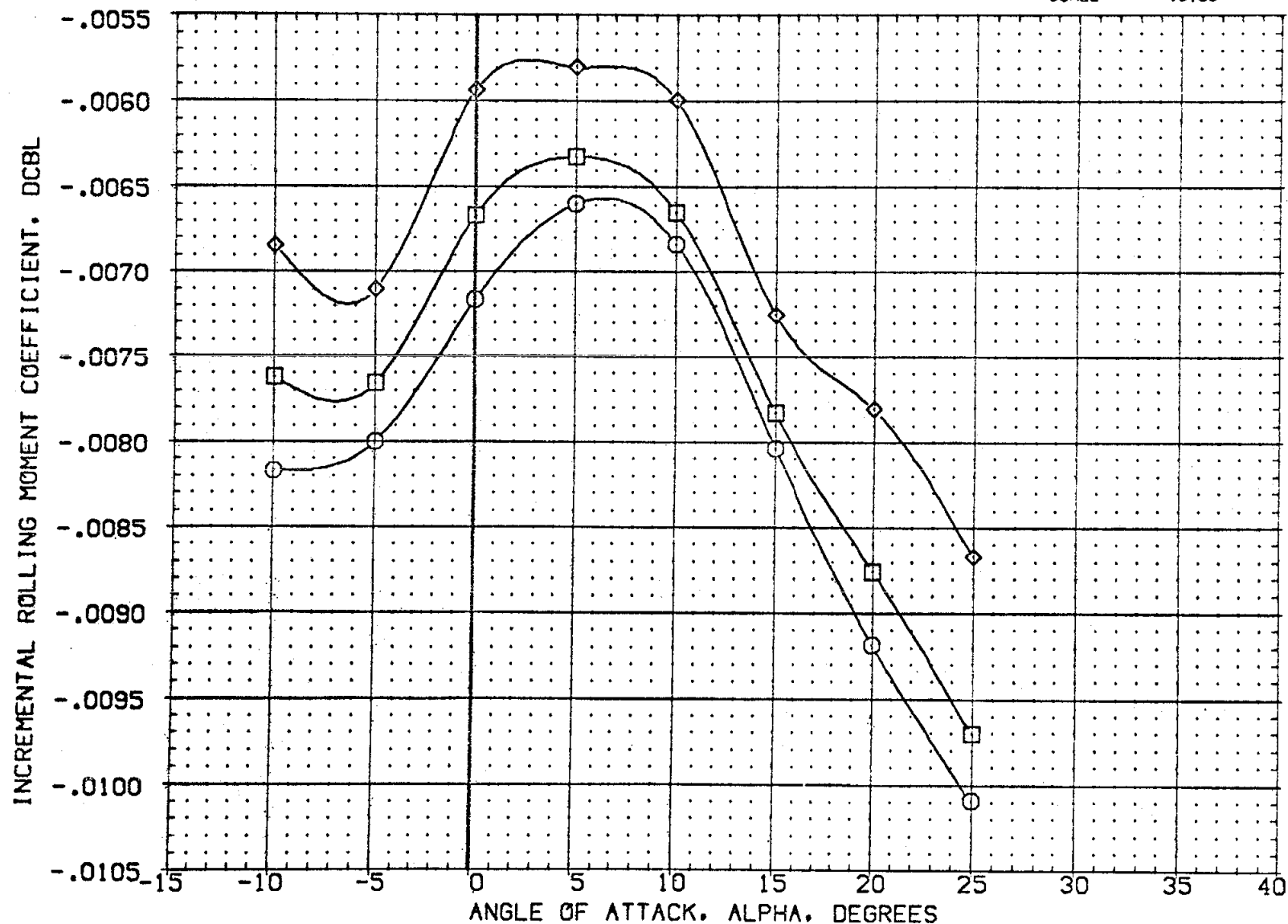


FIG 15 EFFECT OF BDFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2016)	OA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN -14.250	446.000	.000	7.000	SREF	2690.0000 SQ.FT.
(CH2024)	OA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN .000	446.000	.000	7.000	LREF	474.8100 IN.
(CH2009)	OA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN 13.750	446.000	.000	7.000	BREF	936.6800 IN.
						XMRP	1076.6700 IN. XO
						YMRP	.0000 IN. YO
						ZMRP	375.0000 IN. ZO
						SCALE	.0100

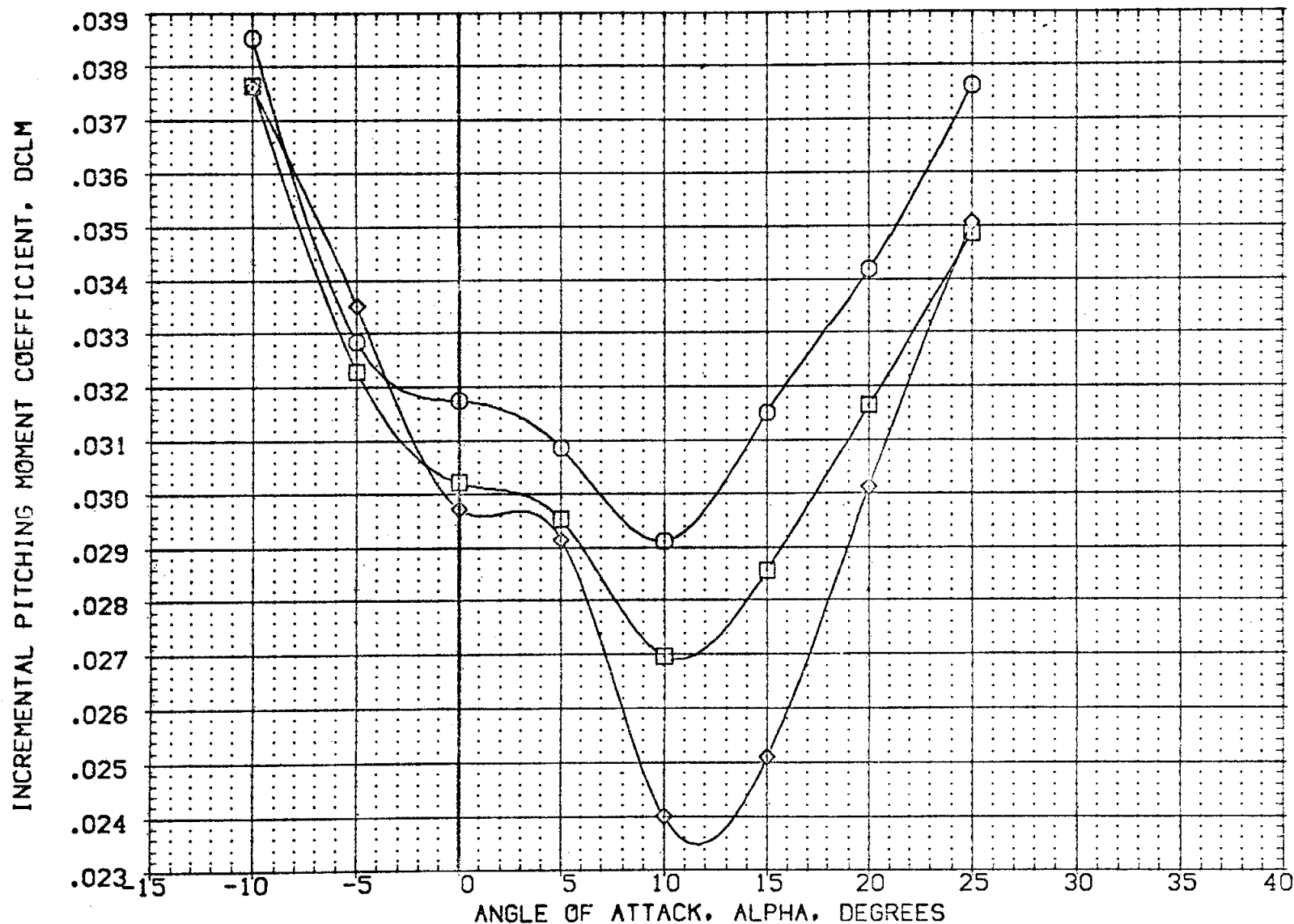


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCPCS	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2016)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(CH2024)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	.000	7.000	LREF 474.8100 IN.
(CH2009)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	446.000	.000	7.000	BREF 936.6800 IN.
							XMRP 1076.6700 IN. X0
							YMRP .0000 IN. Y0
							ZMRP 375.0000 IN. Z0
							SCALE .0100

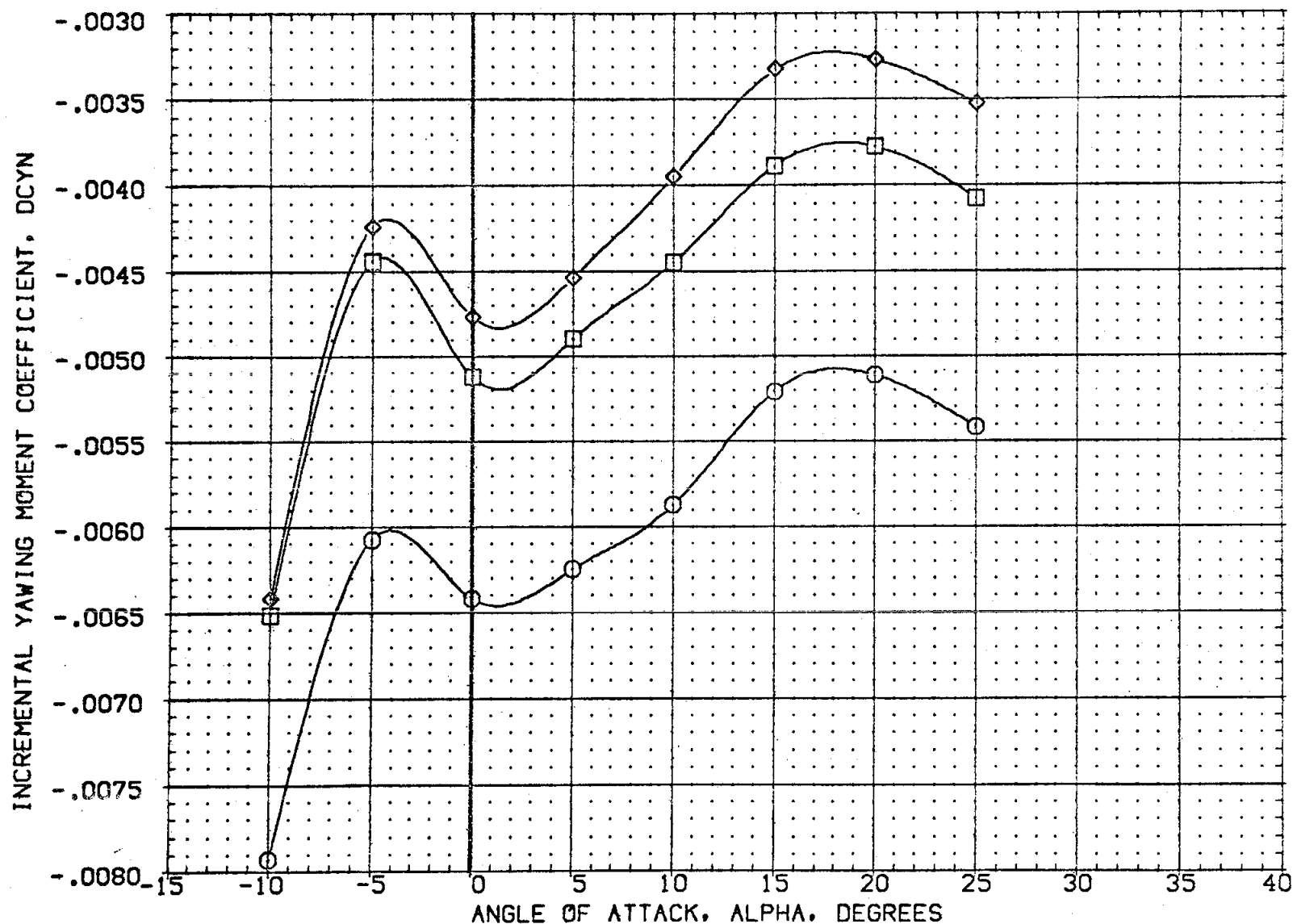


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH216N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN -14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(ZH224N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN .000	446.000	.000	7.000	LREF 474.8100 IN.
(ZH209N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN 13.750	446.000	.000	7.000	BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) NN52	RCS OFF -14.250	.000	.000	.000	XMRP 1076.6700 IN. X0
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NN51	RCS OFF .000	.000	.000	.000	YMRP .0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) NN51	RCS OFF 13.750	.000	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

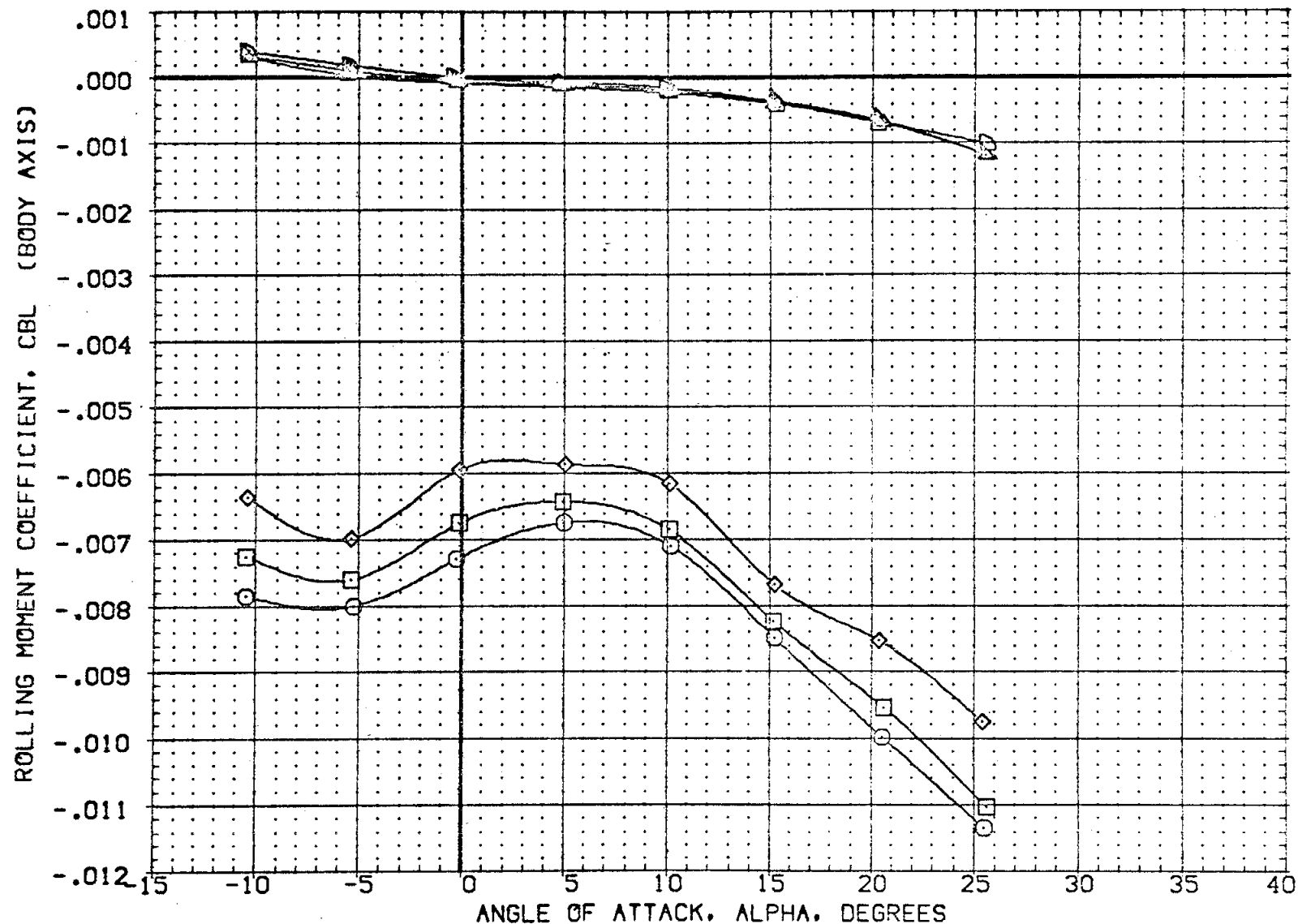


FIG 15 EFFECT OF BDFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH216N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN -14.250	446.000	.000	7.000	SREF 2690.0000 SQ.FT.
(ZH224N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN .000	446.000	.000	7.000	LREF 474.8100 IN.
(ZH209N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN 13.750	446.000	.000	7.000	BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) N49	RCS OFF -14.250	.000	.000	.000	XMRP 1076.6700 IN. X0
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N49	RCS OFF .000	.000	.000	.000	YMRP .0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) N49	RCS OFF 13.750	.000	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

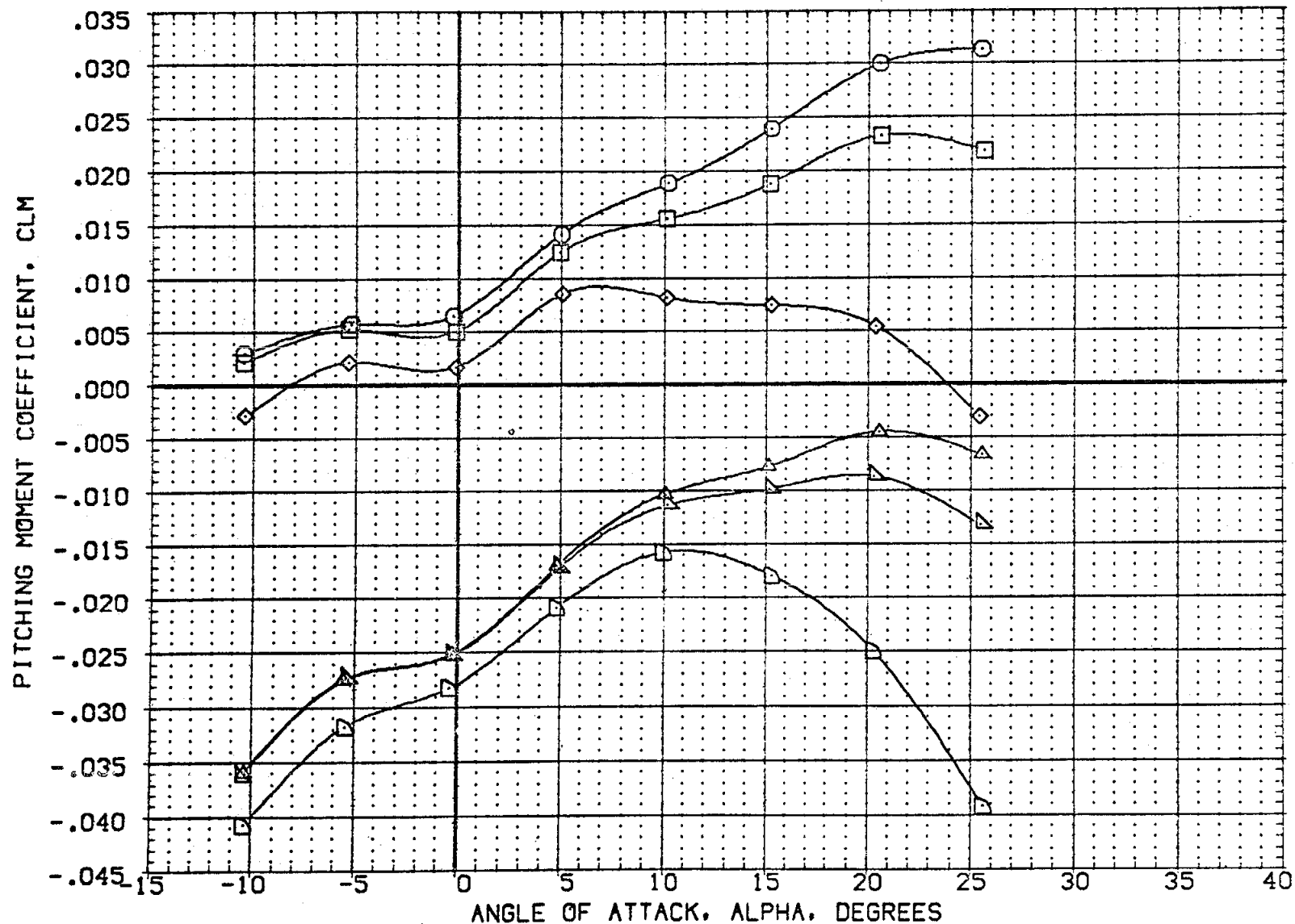


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH216N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	446.000	.000	7.000 SREF 2690.0000 SQ.FT.
(ZH224N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	446.000	.000	7.000 LREF 474.8100 IN.
(ZH209N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	446.000	.000	7.000 BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-14.250	.000	.000	.000 XMRP 1076.6700 IN. X0
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	.000 YMRP .0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000 ZMRP 375.0000 IN. Z0
						SCALE .0100

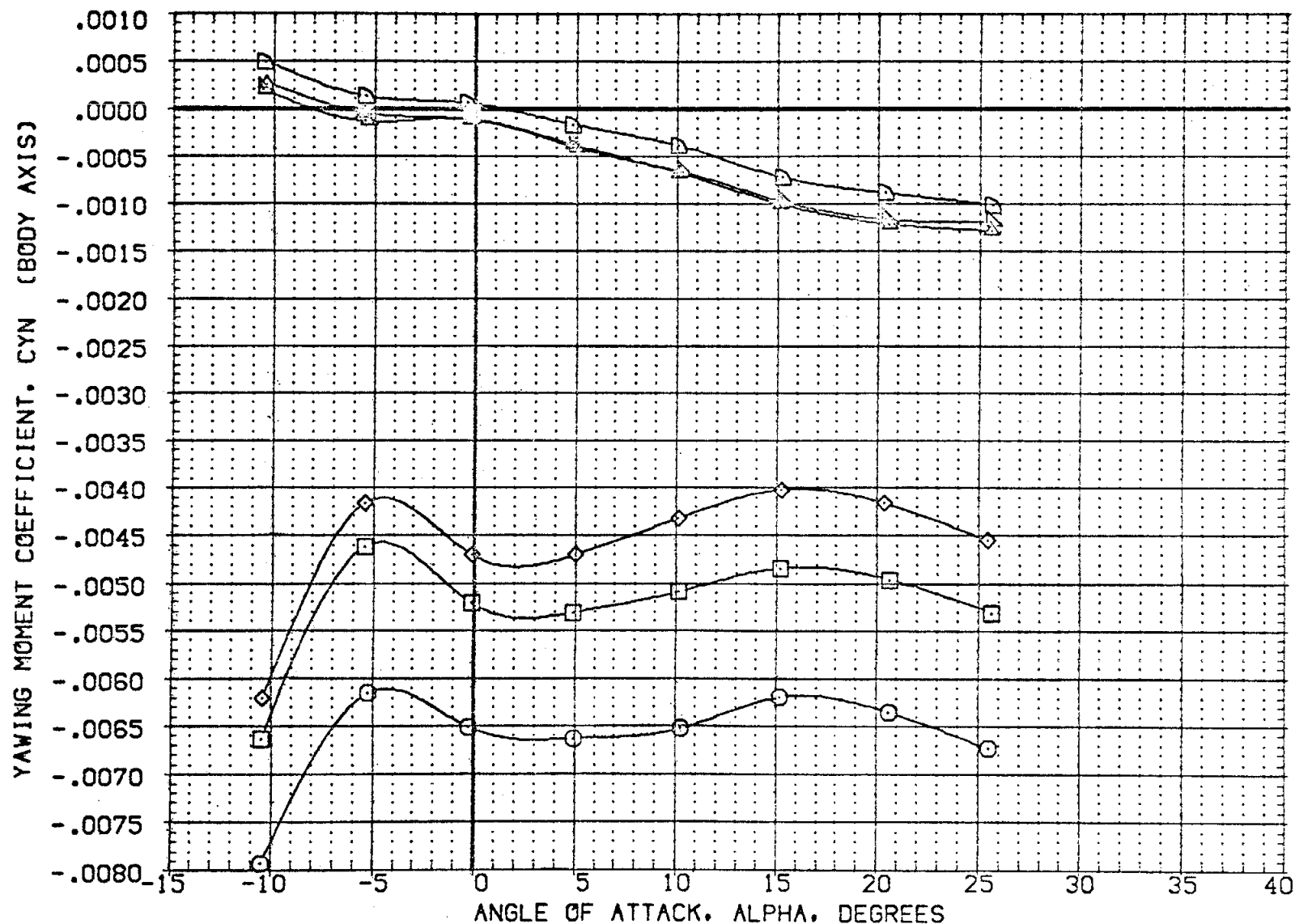


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2015)	BA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(CH2025)	BA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH2008)	BA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	158.000	.000	20.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

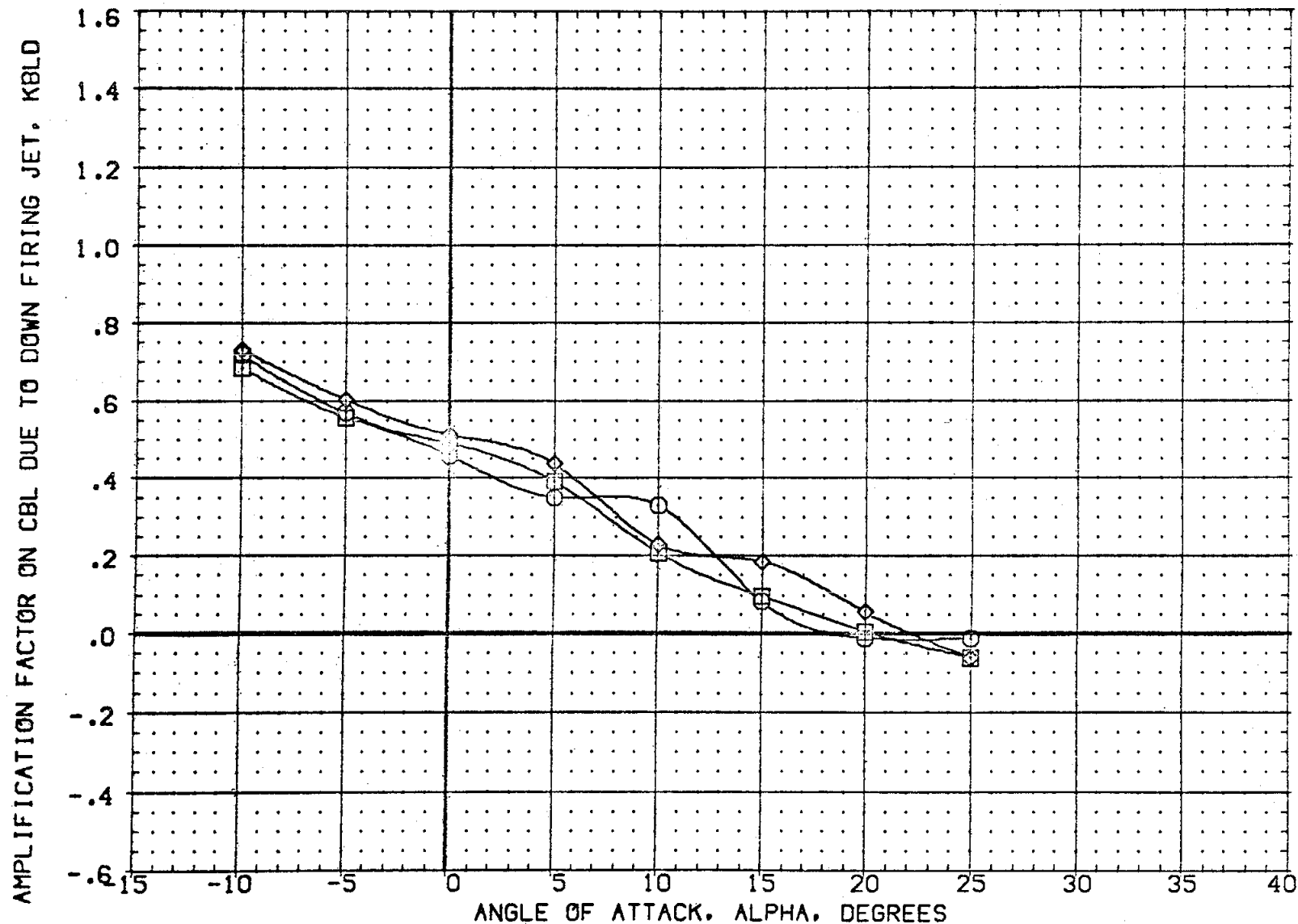


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION	
(CH2015)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(CH2025)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH20C8)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	158.000	.000	20.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

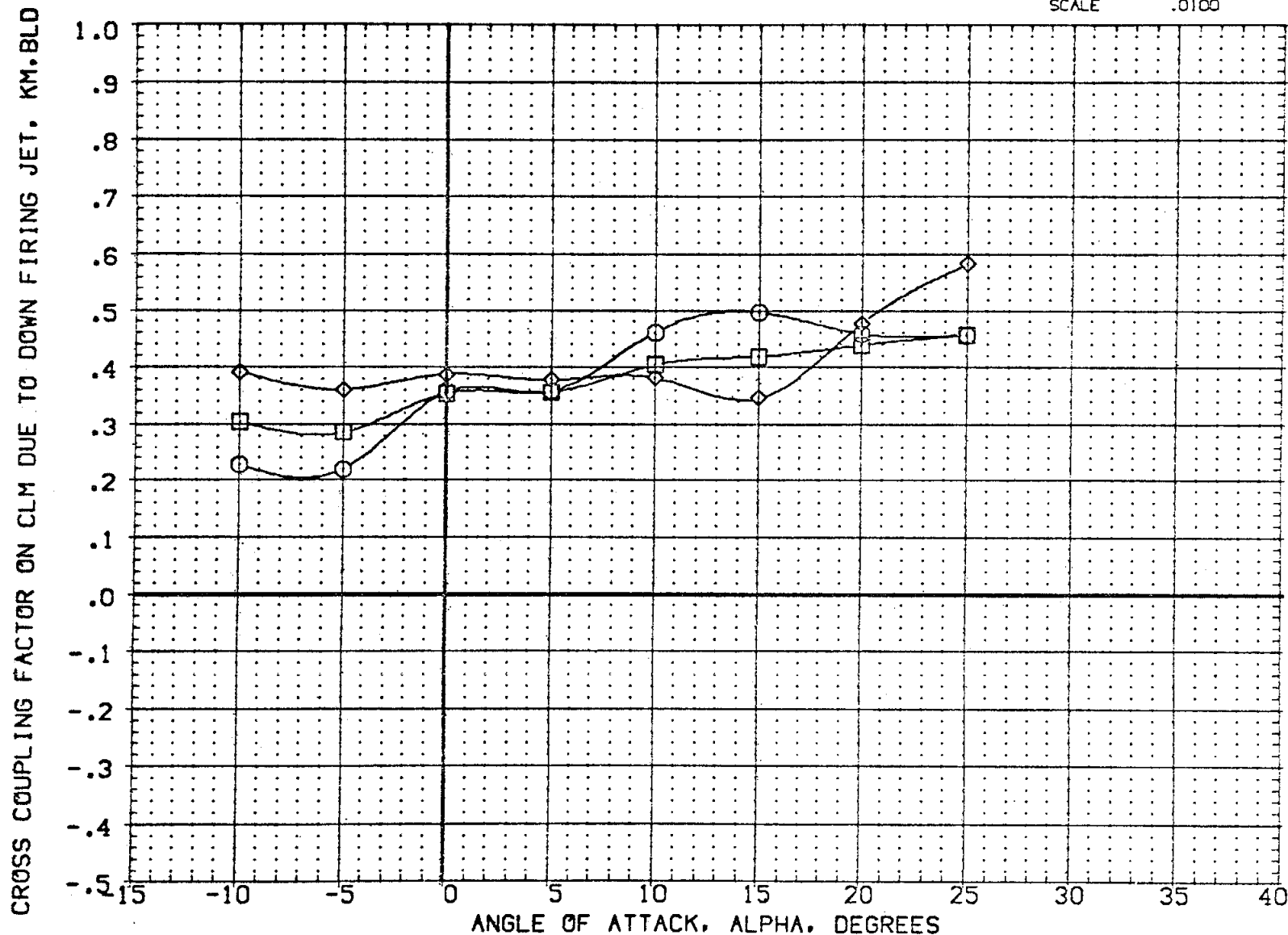


FIG 15 EFFECT OF BDflap DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2015)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(CH2025)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH2008)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	158.000	.000	20.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

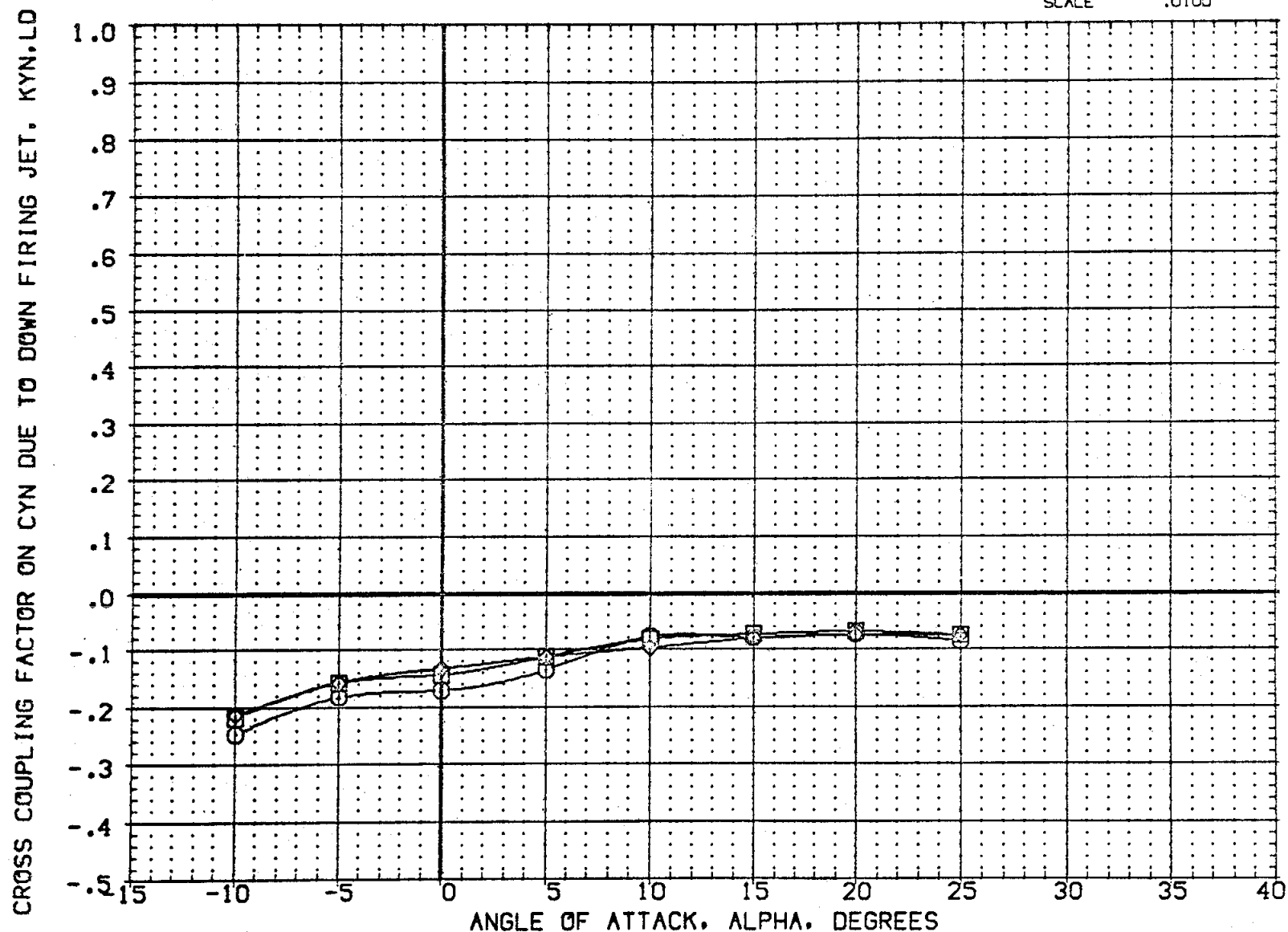


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2015)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	158.000	.000	20.000	SREF	2690.0000 50.FT.
(CH2025)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH2008)	DA105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	158.000	.000	20.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

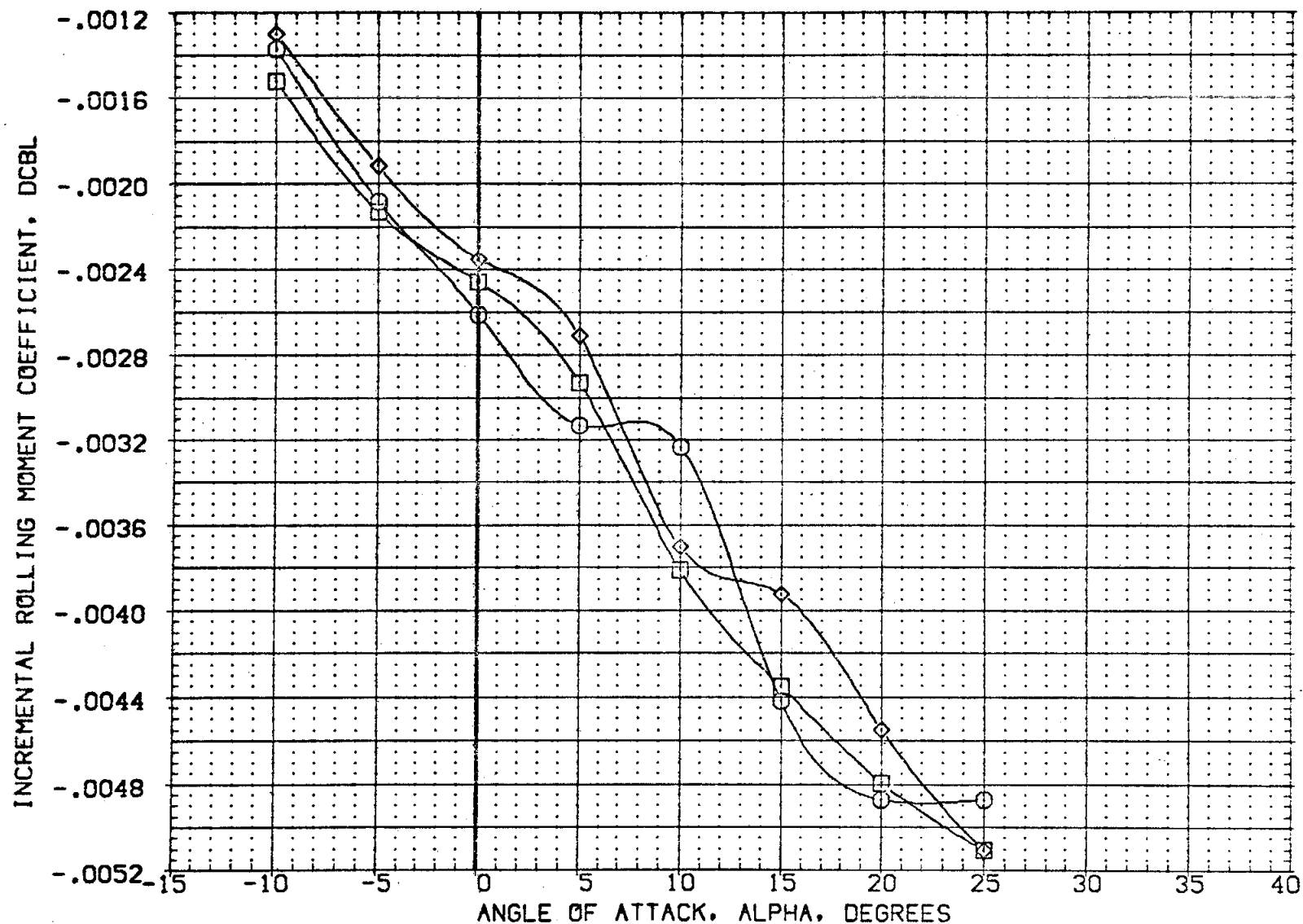


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH DOWN	BDFLAP	PCRC5	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2015)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	158.000	.000	20.000	SREF	2690.0000	SQ.FT.
(CH2025)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	.000	20.000	LREF	474.8100	IN.
(CH2008)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	158.000	.000	20.000	BREF	936.6800	IN.
							XMRP	1076.6700	IN. X0
							YMRP	.0000	IN. Y0
							ZMRP	375.0000	IN. Z0
							SCALE	.0100	

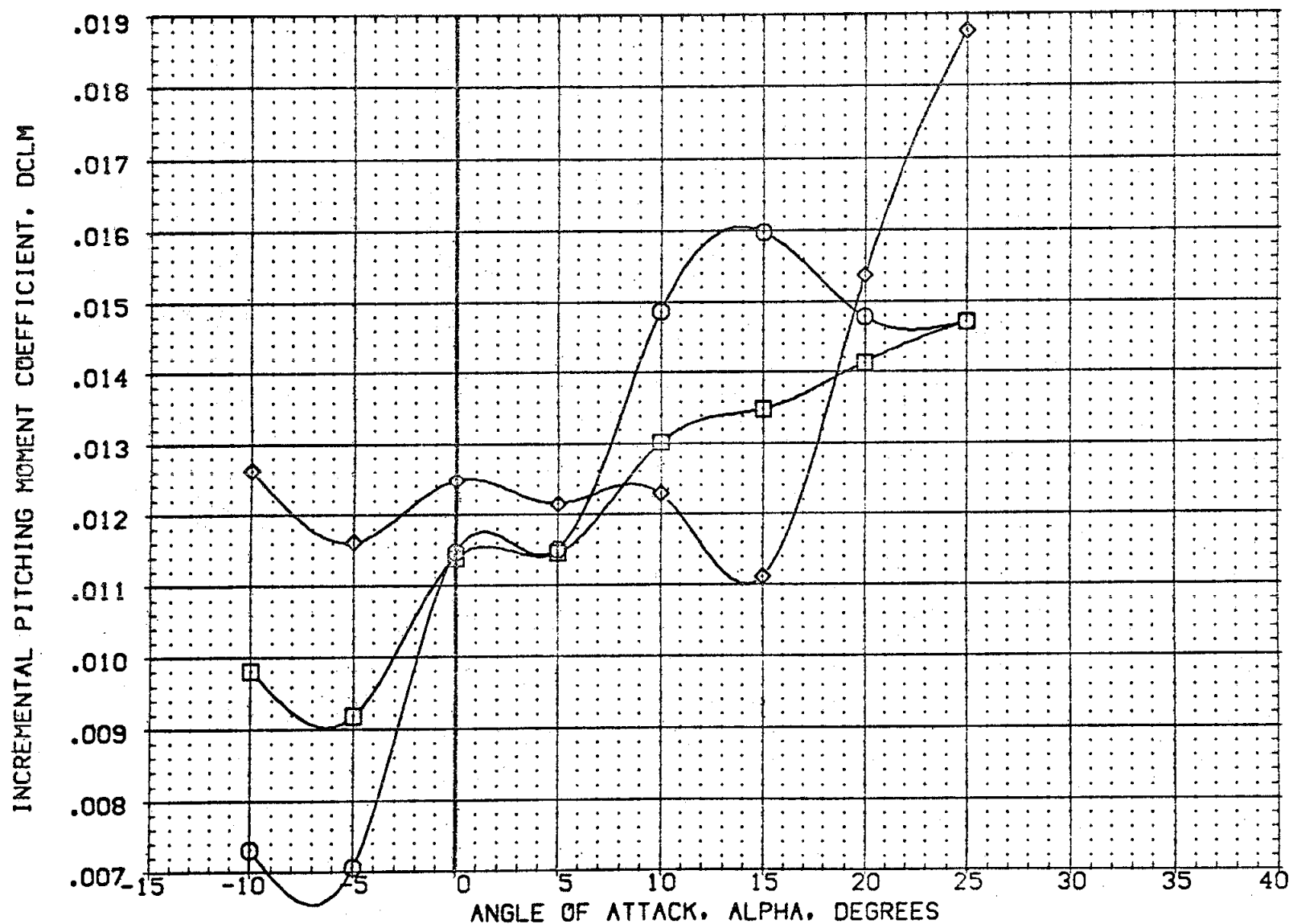


FIG 15 EFFECT OF BDFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION		
(CH2015)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	158.000	.000	20.000	SREF	2690.0000 SQ.FT.
(CH2025)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	.000	20.000	LREF	474.8100 IN.
(CH2008)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	158.000	.000	20.000	BREF	936.6800 IN.
							XMRP	1076.6700 IN. X0
							YMRP	.0000 IN. Y0
							ZMRP	375.0000 IN. Z0
							SCALE	.0100

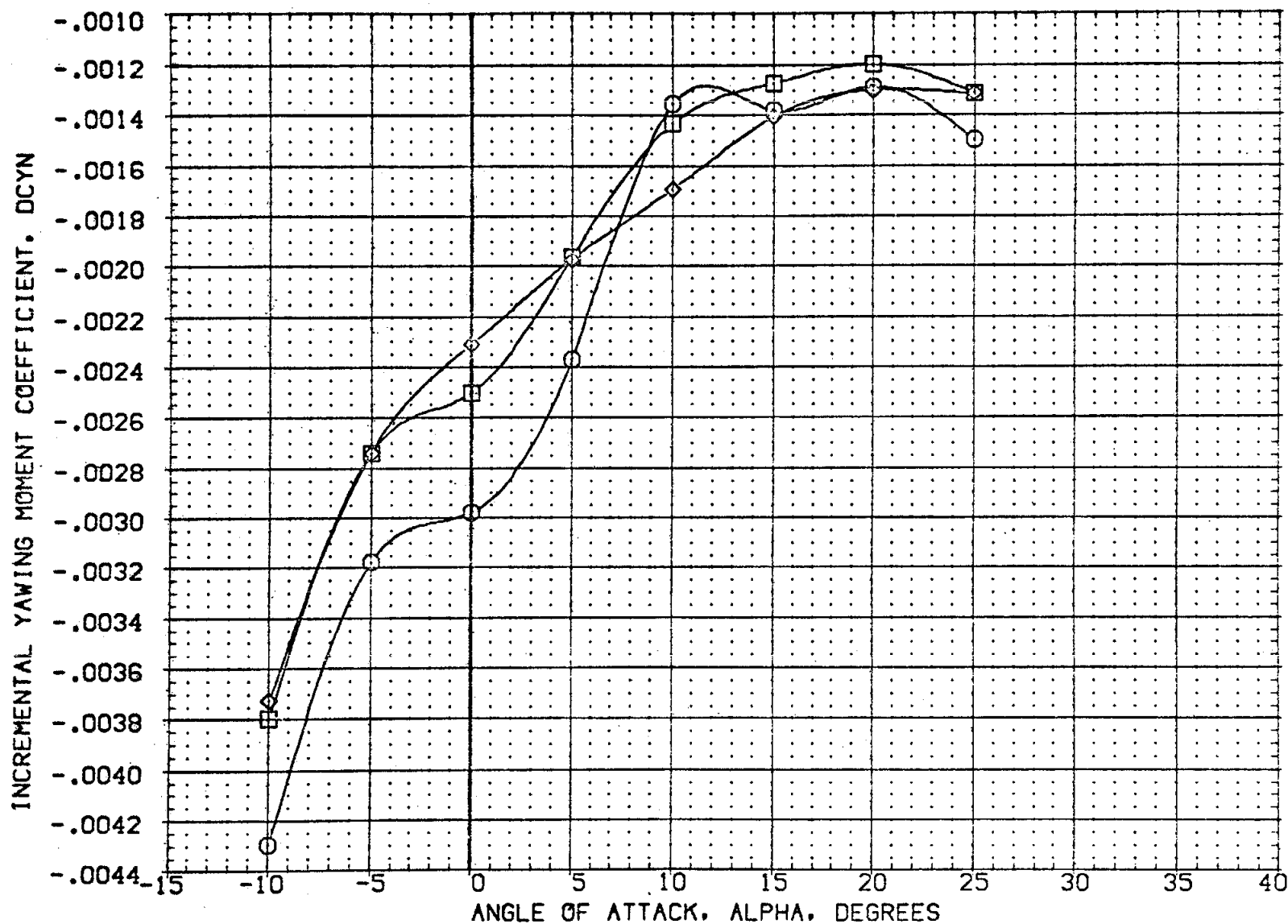


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PITCH	BDFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH215N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	158.000	.000	20.000	SREF 2690.0000 SQ.FT.
(ZH225N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	.000	20.000	LREF 474.8100 IN.
(ZH208N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	158.000	.000	20.000	BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) NN52	RCS OFF	-14.250	.000	.000	.000	XMRP 1076.6700 IN. XO
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NN51	RCS OFF	.000	.000	.000	.000	YMRP .0000 IN. YO
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) NS1	RCS OFF	13.750	.000	.000	.000	ZMRP 375.0000 IN. ZO
							SCALE .0100

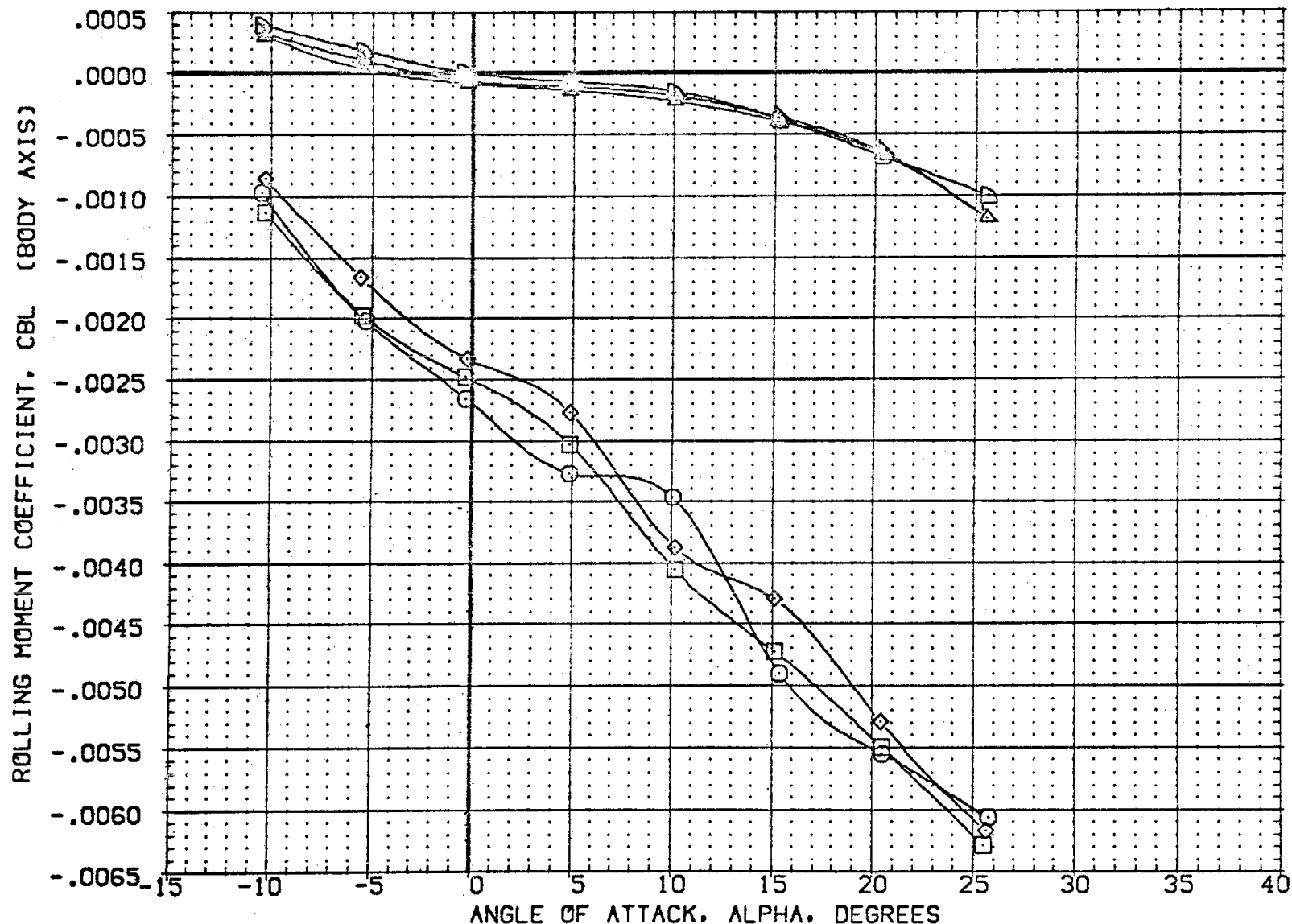


FIG 15 EFFECT OF BDflap DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PCRC	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH215N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	158.000	.000	20.000 SREF 2690.0000 SQ.FT.
(ZH225N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	.000	20.000 LREF 474.8100 IN.
(ZH208N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	158.000	.000	20.000 BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) N452	RCS OFF	-14.250	.000	.000	.000 XMRP 1076.6700 IN. X0
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) N451	RCS OFF	.000	.000	.000	.000 YMRP .0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) N51	RCS OFF	13.750	.000	.000	.000 ZMRP 375.0000 IN. Z0
						SCALE .0100

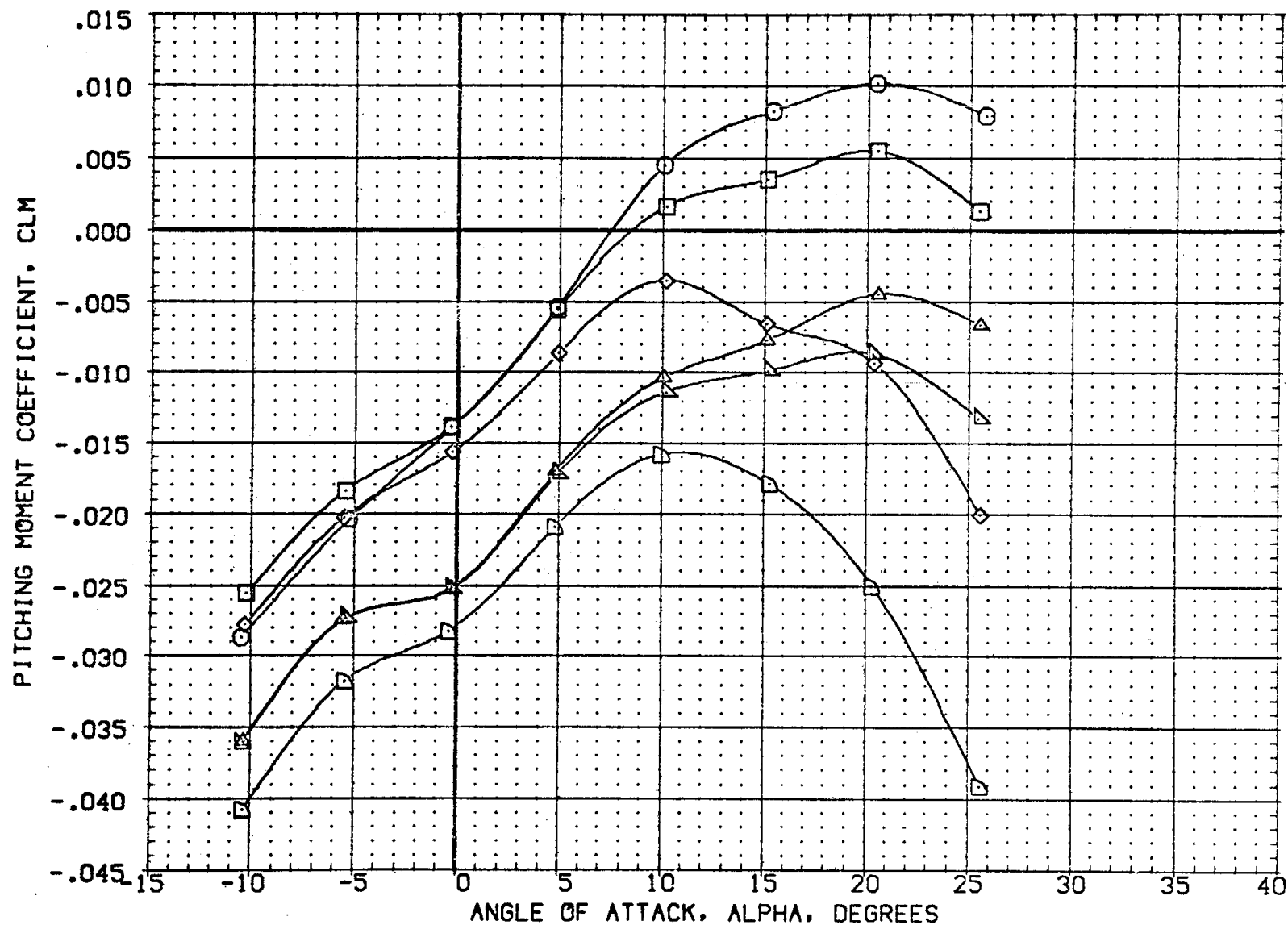


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	PC RCS	ELEVON	Q-SIM	REFERENCE INFORMATION
(ZH215N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	-14.250	158.000	.000	20.000 SREF 2690.0000 50. FT.
(ZH225N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	.000	158.000	.000	20.000 LREF 474.8100 IN.
(ZH208N)	0A105 CFHT109 MODEL 32-0 (0)N49	PITCH DOWN	13.750	158.000	.000	20.000 BREF 936.6800 IN.
(ZH202F)	0A105 CFHT109 MODEL 32 0(0) NNS2	RCS OFF	-14.250	.000	.000	XMRP 1076.6700 IN. X0
(ZH203F)	0A105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	.000	.000	.000	YMRP .0000 IN. Y0
(ZH201F)	0A105 CFHT109 MODEL 32 0(0) NNS1	RCS OFF	13.750	.000	.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

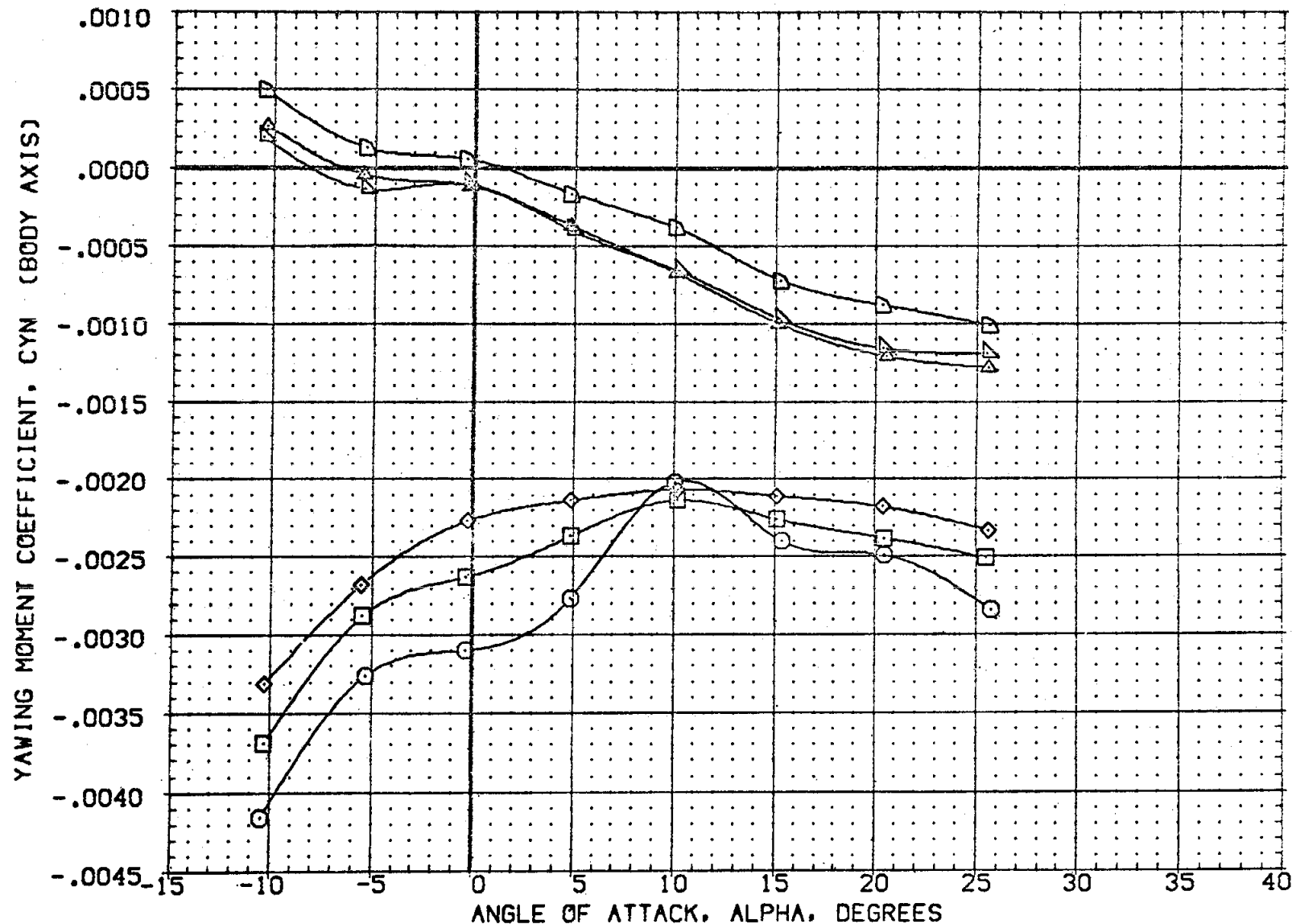


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

(A) MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2007) ○ 0A105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN BOFLAP PCRC5 ELEVON O-SIM  
13.750 62.000 .000 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. XO  
YMRP .0000 IN. YO  
ZMRP 375.0000 IN. ZO  
SCALE .0100

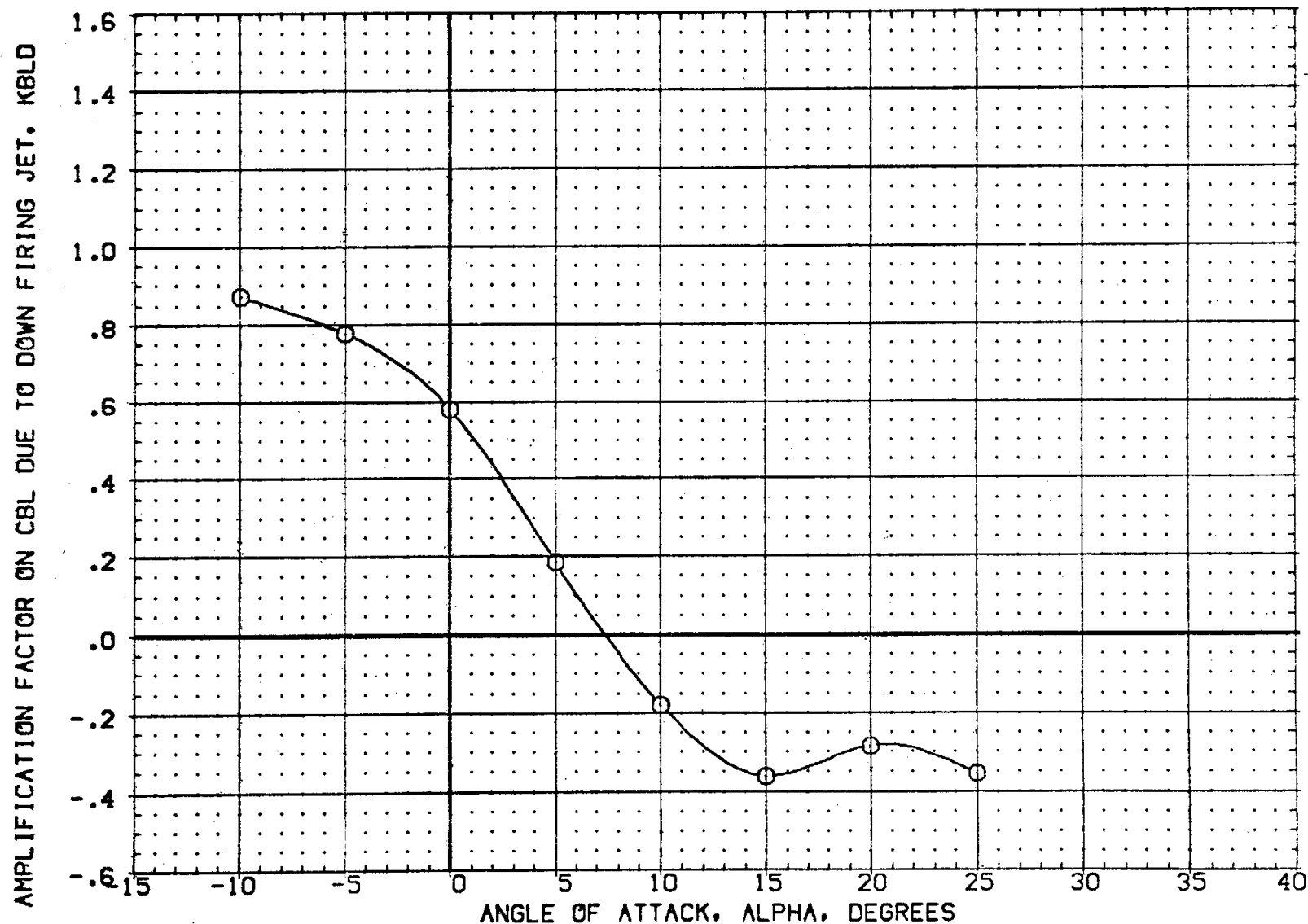


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2007) ○ 0A105 CFM103 MODEL 32-0 (0)N49

PITCH DOWN

BDFLAP 13.750

PCRC5 62.000

ELEVON .000

Q-SIM 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. XC  
YMRP .0000 IN. YC  
ZMRP 375.0000 IN. ZC  
SCALE .0100

CROSS COUPLING FACTOR ON CLM DUE TO DOWN FIRING JET, KM.BLD

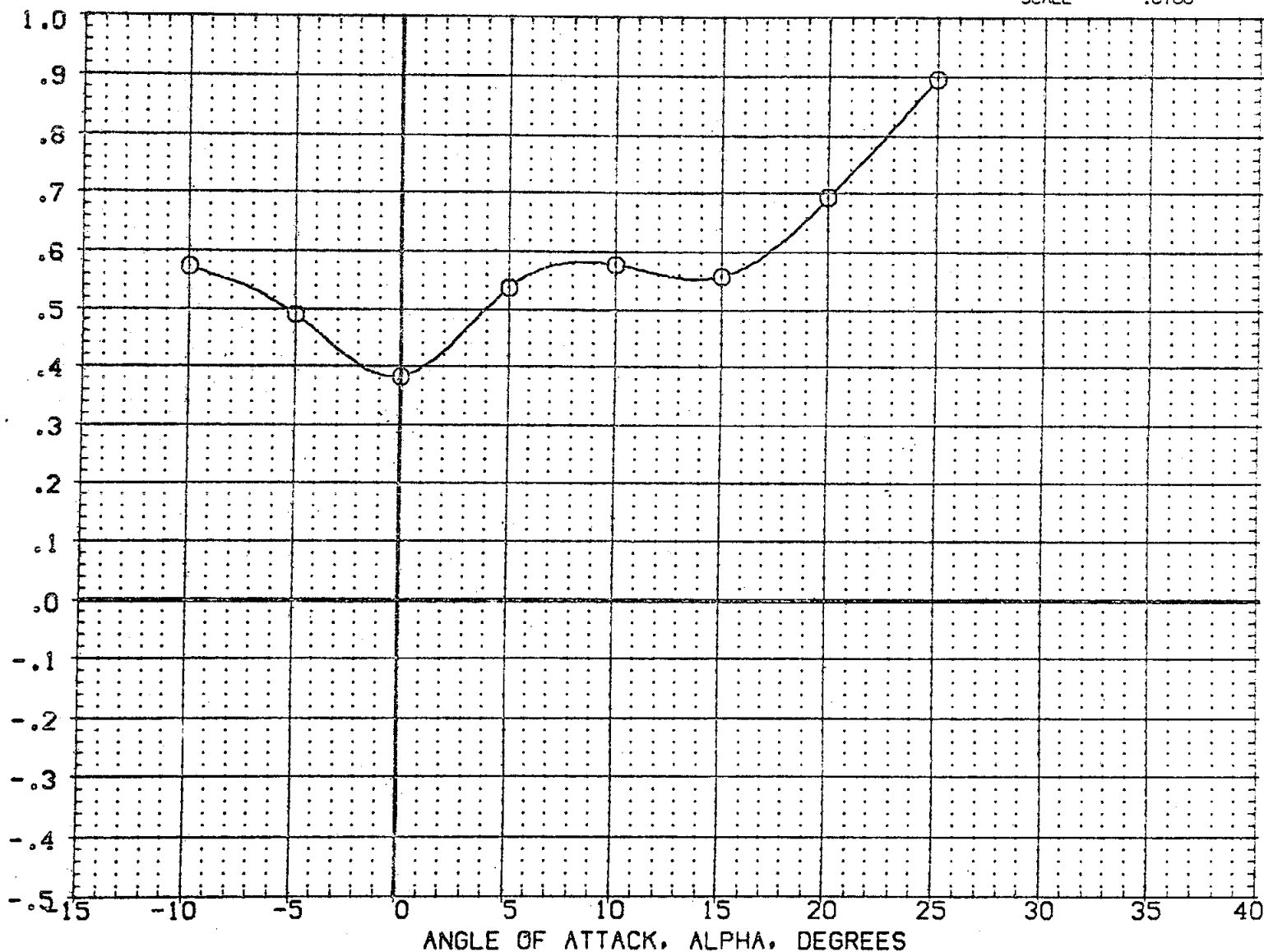


FIG 15 EFFECT OF BDFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2007) ○ 0A105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN

BOFLAP 13.750

PCRC5 62.000

ELEVON .000

Q-SIM 50.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1076.6700	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0100	

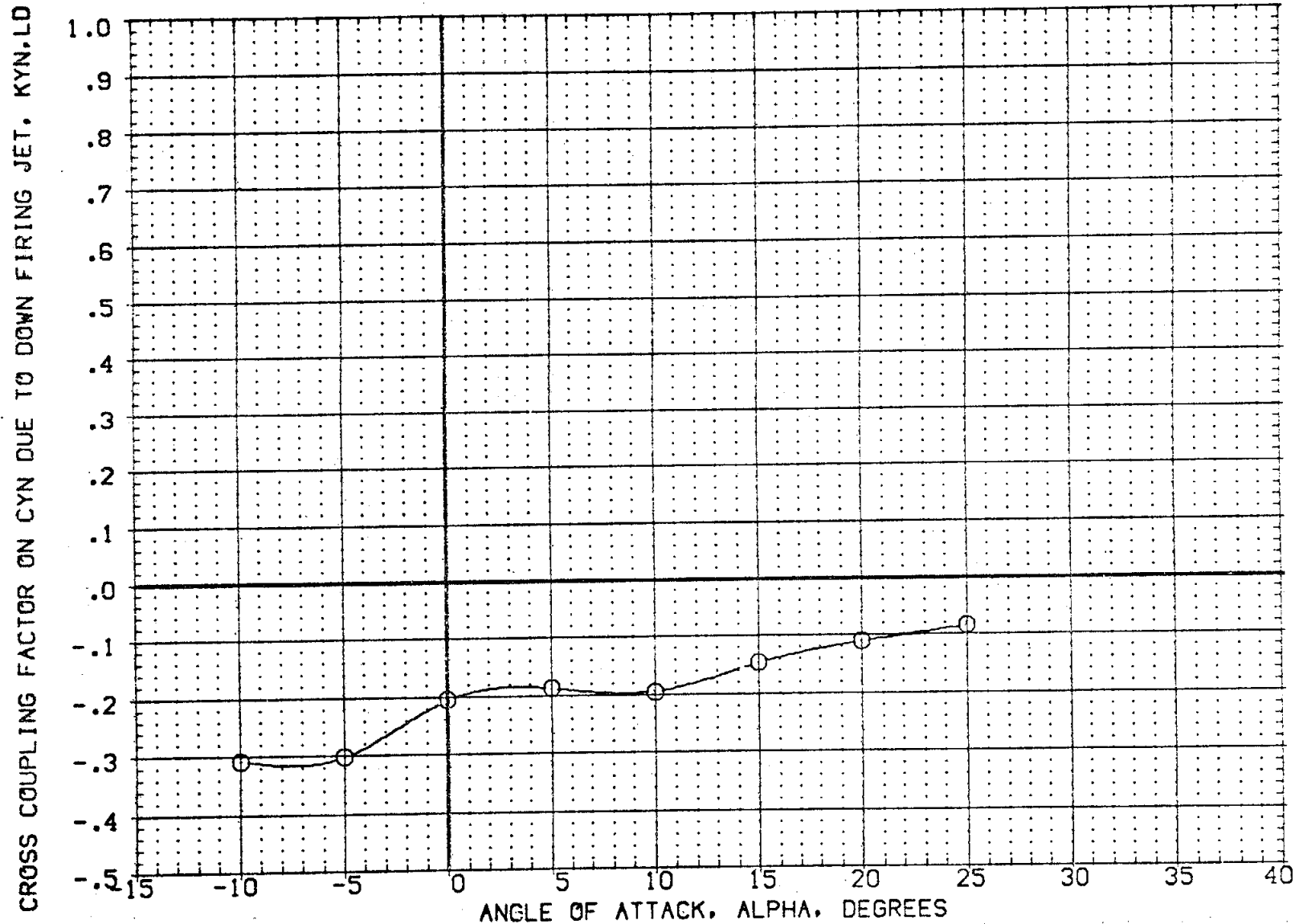


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION. BETA = 0.  
(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2007) ○ 0A105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN

BDFLAP 13.750

PC RCS 62.000

ELEVON .000

Q-SIM 50.000

REFERENCE INFORMATION  
SREF 2690.0000 SQ. FT.  
LREF 474.8100 IN.  
BREF 936.6800 IN.  
XMRP 1076.6700 IN. XO  
YMRP .0000 IN. YO  
ZMRP 375.0000 IN. ZO  
SCALE .0100

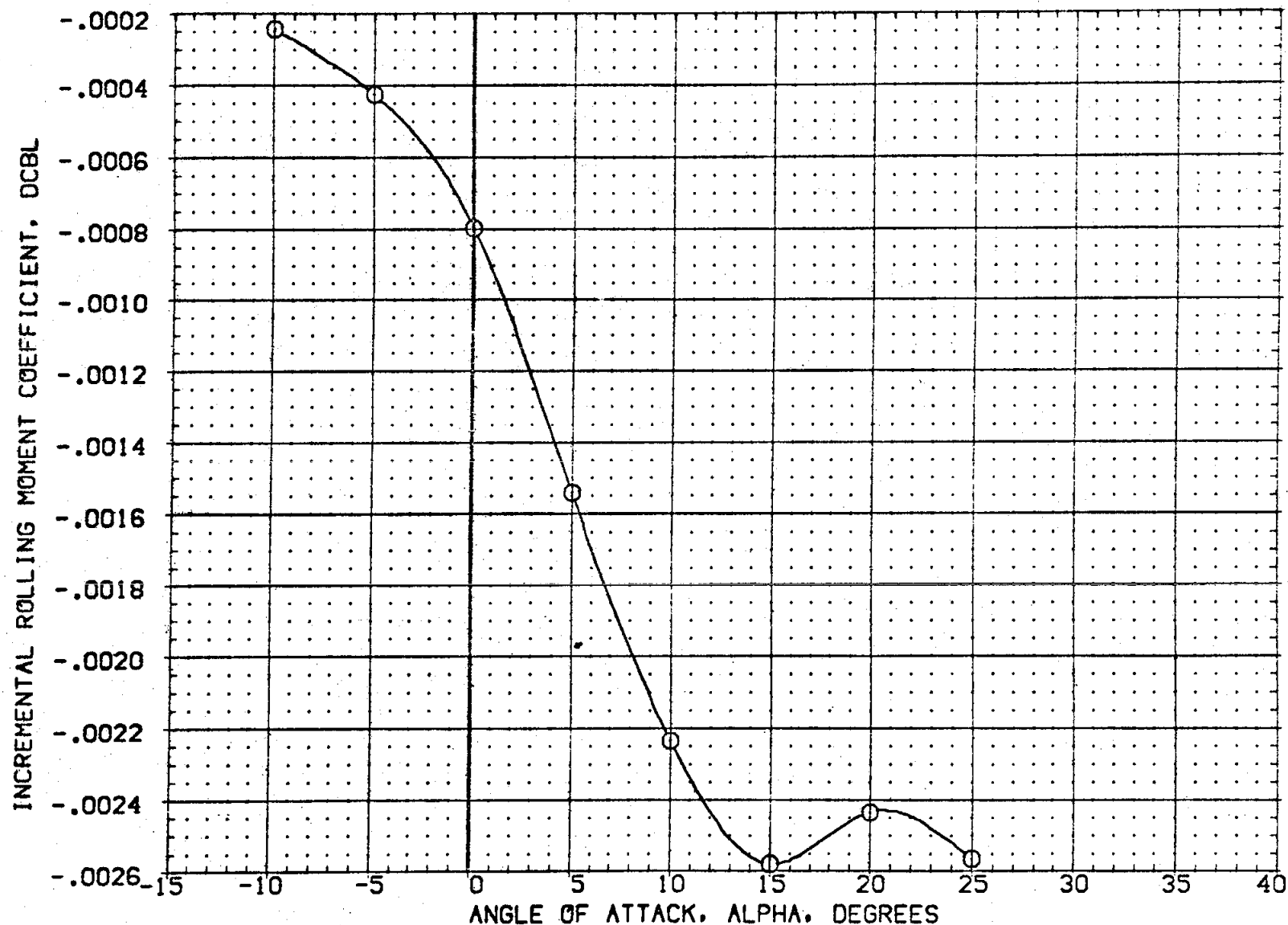


FIG 15 EFFECT OF BDFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
(A) MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
(CH2007) ○ BA105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN BOFLAP 13.750 PCRC5 62.000 ELEVON .000 Q-SIM 50.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ. FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1076.6700	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0100	

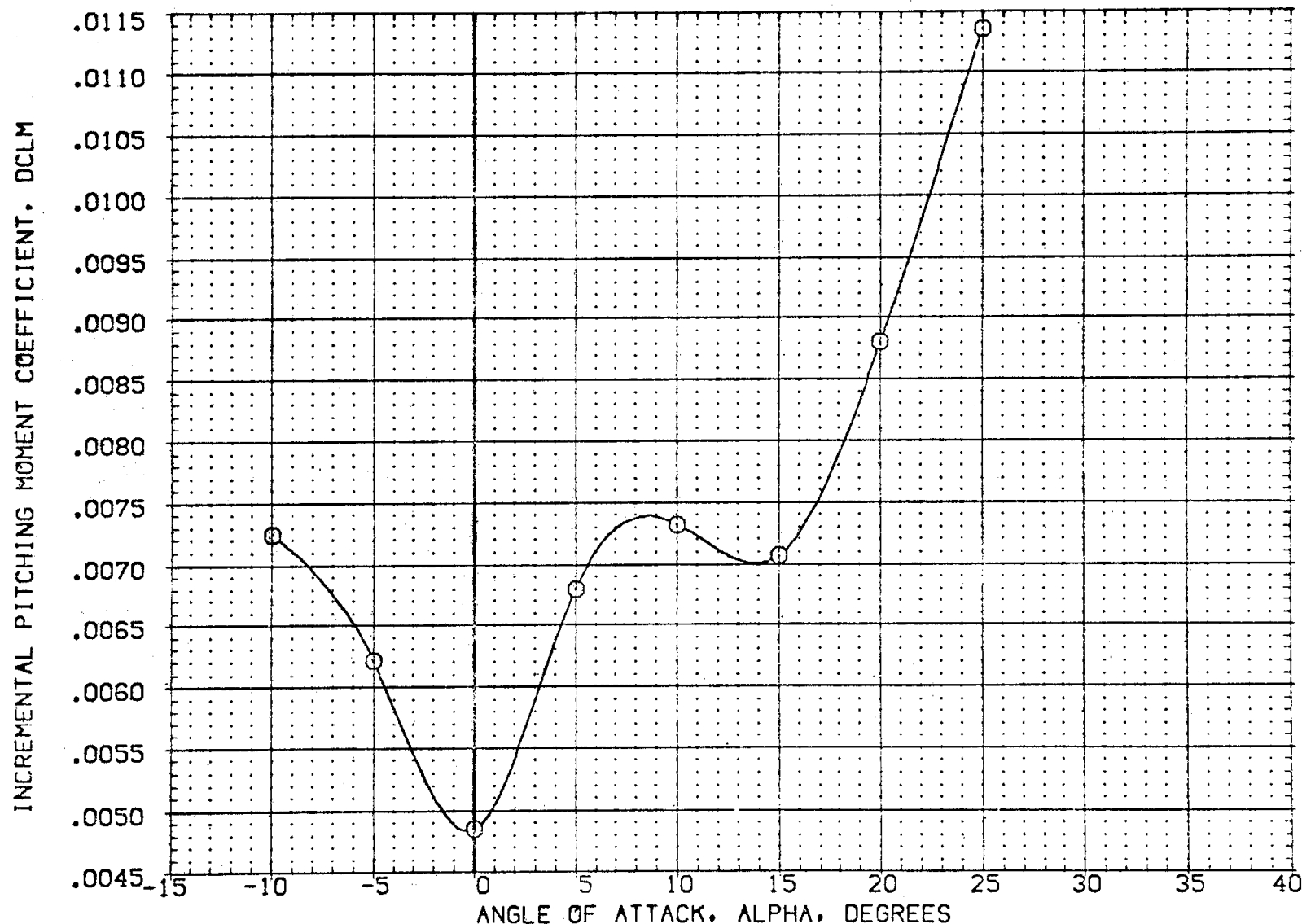


FIG 15 EFFECT OF BOFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL: CONFIGURATION DESCRIPTION  
(CH2007) ○ 0A105 CFHT109 MODEL 32-0 (0)N49

PITCH DOWN

BDFLAP

13.750

PC RCS

62.000

ELEVON

.000

Q-SIM

50.000

REFERENCE INFORMATION

SREF	2690.0000	SQ. FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1076.6700	IN. XC
YMRP	.0000	IN. YC
ZMRP	375.0000	IN. ZC
SCALE	.0100	

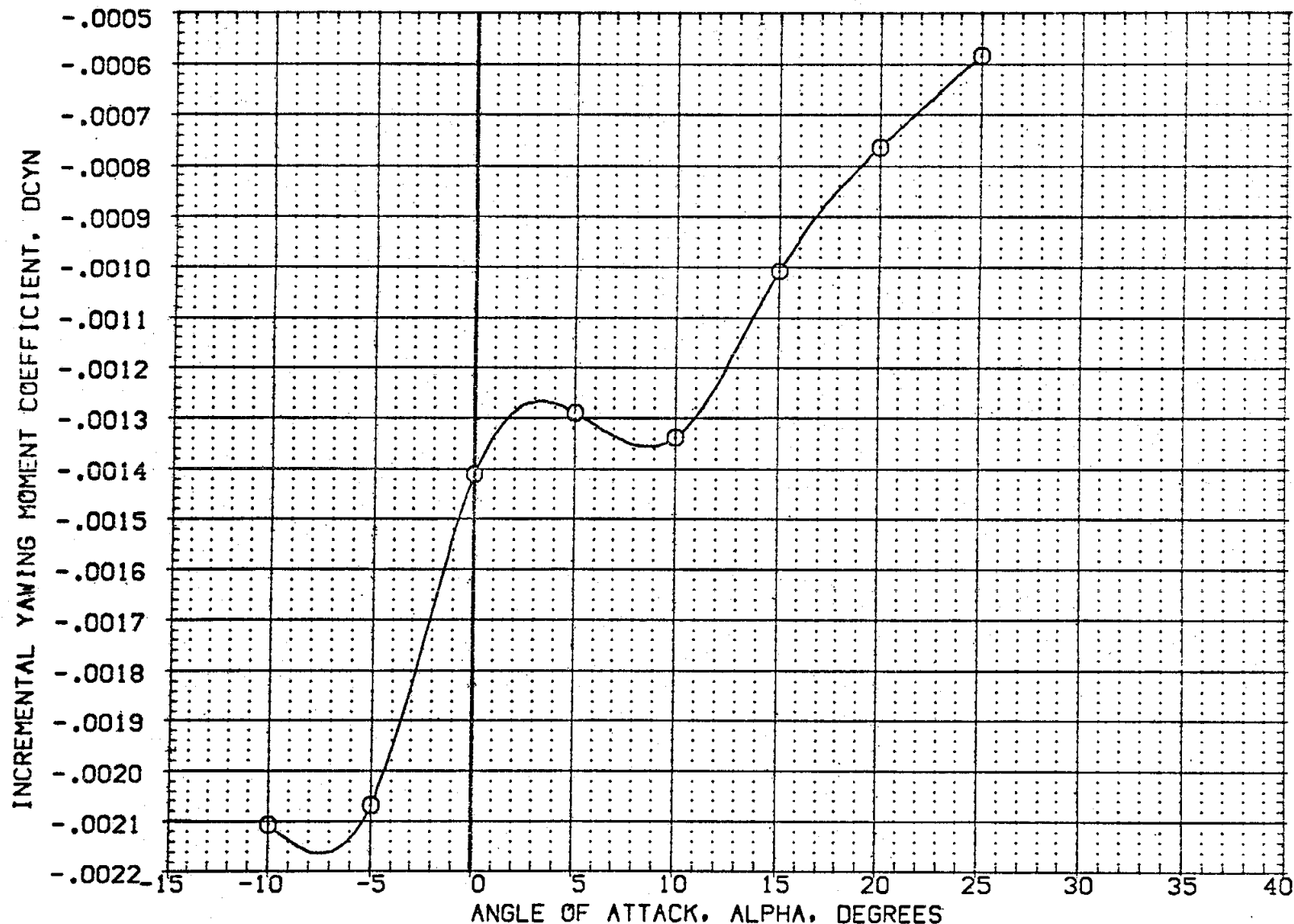


FIG 15 EFFECT OF BDflap DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(ZH207N) ○ BA105 CFHT109 MODEL 32-0 (0)N49  
 (ZH201F) □ BA105 CFHT109 MODEL 32 0(0) NS1

PITCH DOWN  
 RCS OFF

BDFLAP

13.750  
 13.750

PCRC

62.000  
 .000

ELEVON

.000  
 .000

Q-SIM

50.000  
 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. XO  
 YMRP .0000 IN. YO  
 ZMRP 375.0000 IN. ZO  
 SCALE .0100

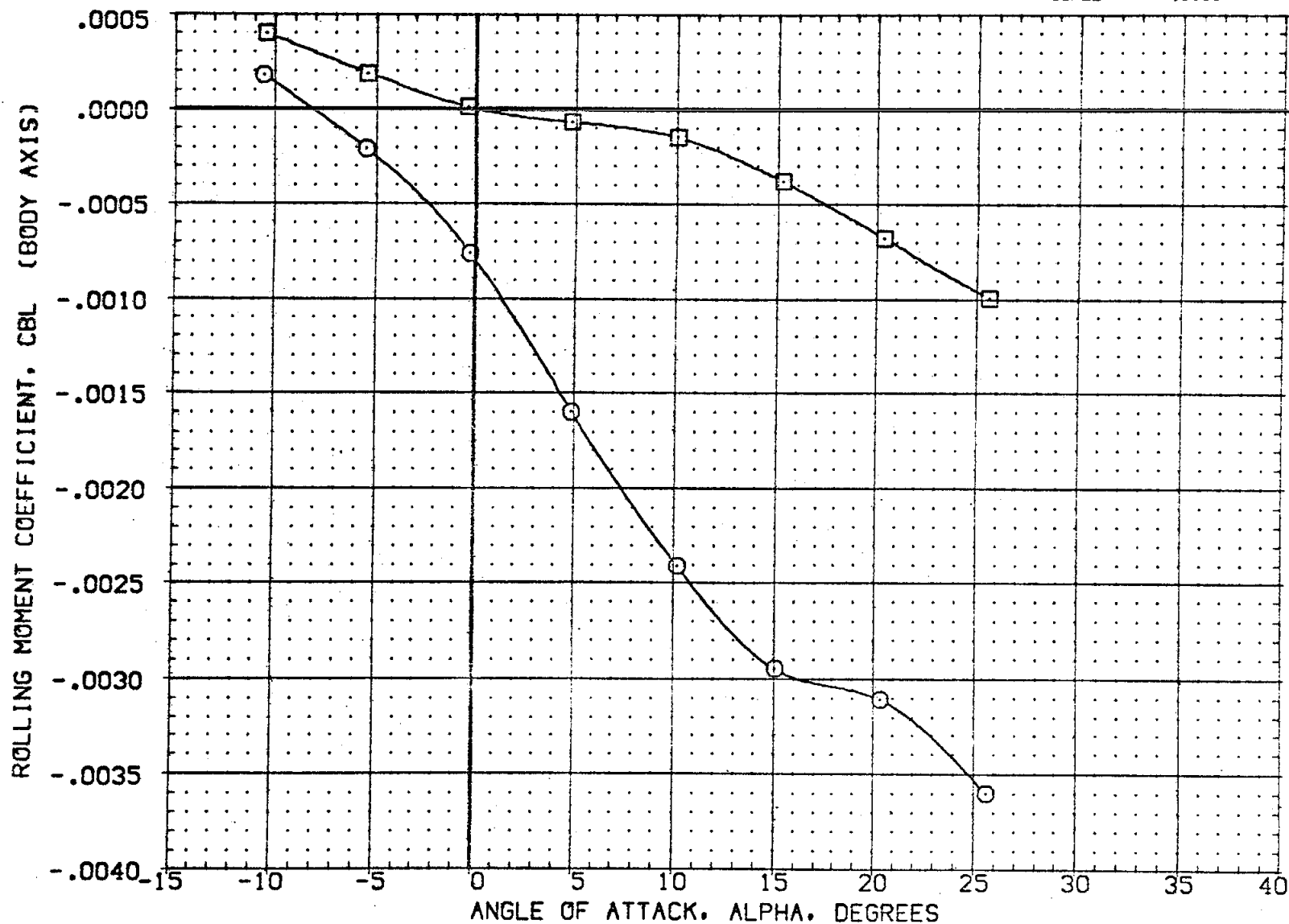


FIG 15 EFFECT OF BDflap DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(ZH207N) ○ 0A105 CFHT109 MODEL 32-0 (0)N49  
(ZH201F) □ 0A105 CFHT109 MODEL 32 0(0) N51

PITCH DOWN  
RCS OFF

BDFLAP  
13.750  
13.750

PC RCS  
62.000  
.000

ELEVON  
.000  
.000

Q-SIM  
50.000  
.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
LREF 474.8100 IN.  
BREF 936.6900 IN.  
XMRP 1076.6700 IN. XO  
YMRP .0000 IN. YO  
ZMRP 375.0000 IN. ZO  
SCALE .0100

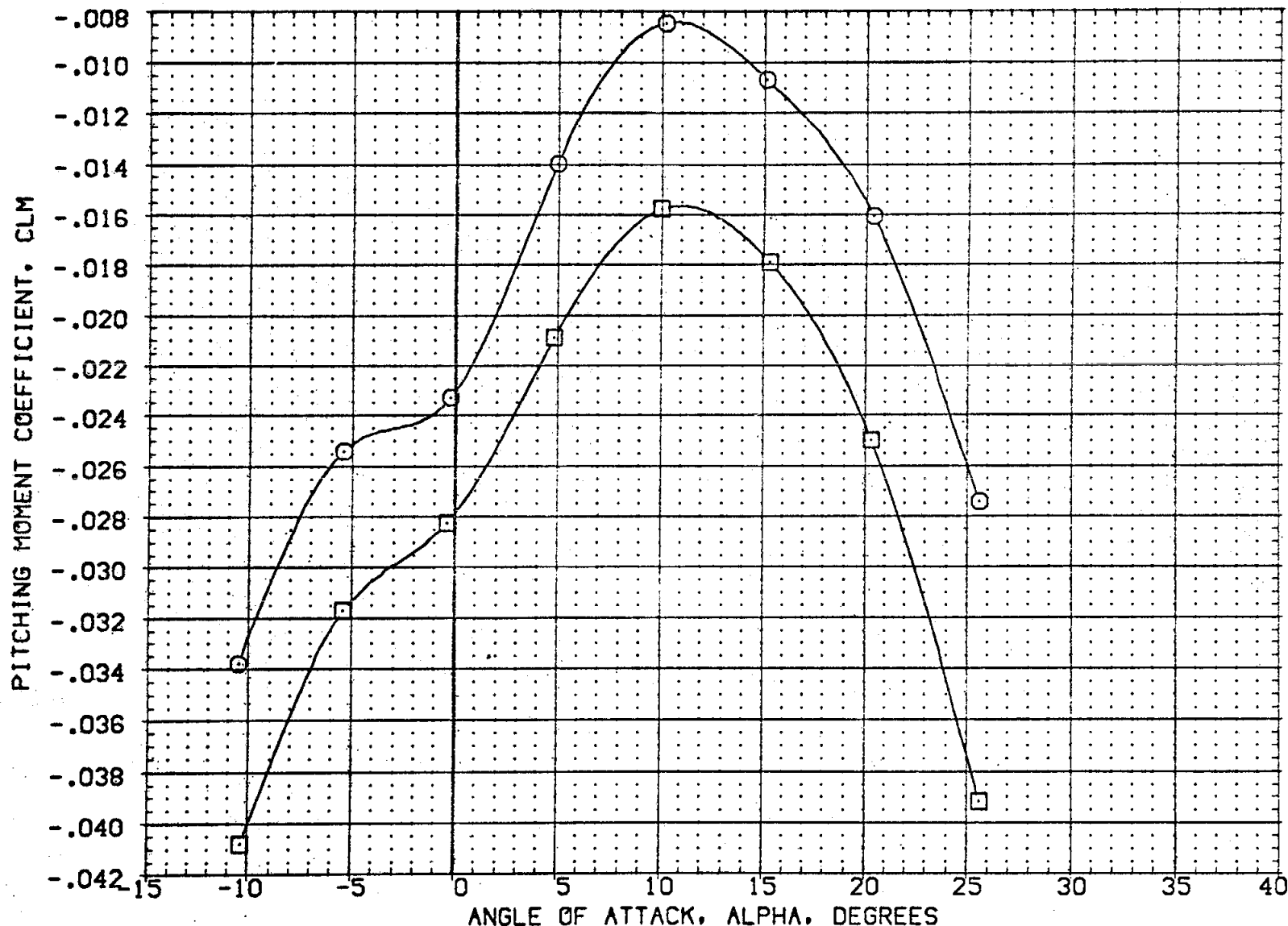


FIG 15 EFFECT OF BDFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0

(A)MACH = 10.33

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(Z4207N)  $\square$  0A105 CFHT109 MODEL 32-0 (0)N49  
 (Z4201F)  $\square$  0A105 CFHT109 MODEL 32 0(0) N51

PITCH DOWN  
 RCS OFF

BDFLAP  
 13.750  
 13.750

PC RCS  
 62.000  
 .000

ELEVON  
 .000  
 .000

Q-SIM  
 50.000  
 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.  
 LREF 474.8100 IN.  
 BREF 936.6800 IN.  
 XMRP 1076.6700 IN. X0  
 YMRP .0000 IN. Y0  
 ZMRP 375.0000 IN. Z0  
 SCALE .0100

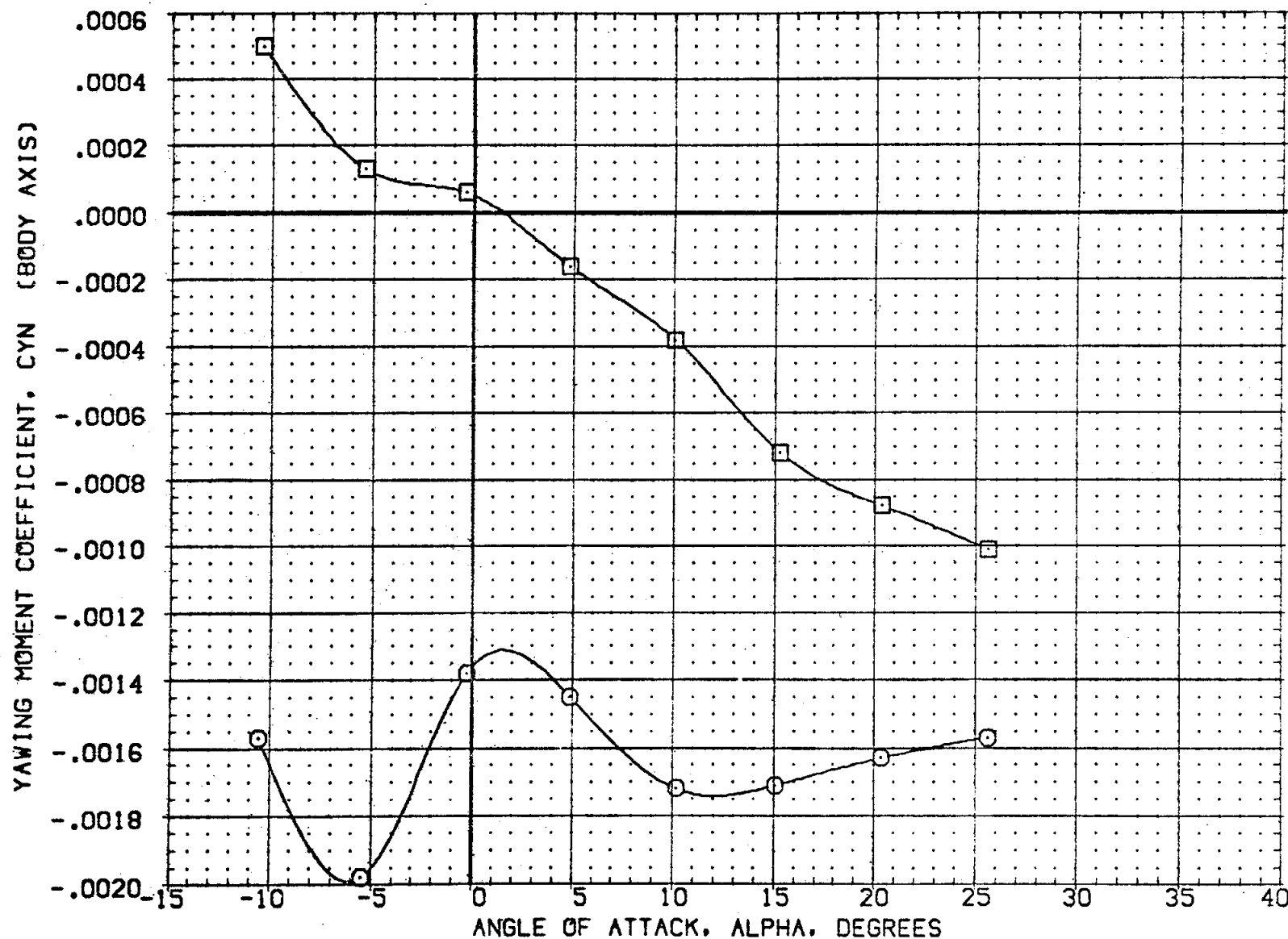


FIG 15 EFFECT OF BDFLAP DEFLECTION ON N49 RCS JET INTERACTION, BETA = 0  
 (A)MACH = 10.33

APPENDIX

TABULATED SOURCE DATA  
(OA105 and selected data from OA85)

Plotted data tabulations are available  
from the DMS on request.

DATE 19 JUN 74

TABULATED SOURCE DATA - OA105

PAGE 1

OA105 CFHT109 MODEL 32 O(O) N51

RCS OFF

(ZH201F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = .000 ELEVON = .000  
 AILRON = .000 BDCLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = .000

RUN NO. 3/ 0 RN/L = 1.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCs
10.330	-10.418	-.00465	-.21504	.12353	-.04080	.00040	.00050	-.00140	-.18916	.16038	.16191
10.330	-5.425	-.00070	-.14131	.10592	-.03173	.00019	.00013	-.00126	-.13067	.11881	.07796
10.330	-3.584	.00075	-.06051	.08565	-.02823	.00001	.00006	-.00197	-.05993	.08606	.11969
10.330	4.819	.00247	.02433	.07429	-.02089	-.00007	-.00016	-.00204	.01800	.07607	.11960
10.330	10.024	.00448	.13736	.06918	-.01577	-.00015	-.00038	-.00327	.12322	.09294	.16171
10.330	15.287	.00720	.29793	.06637	-.01790	-.00038	-.00072	-.00506	.26989	.14257	.11950
10.330	20.348	.00944	.48737	.06623	-.02502	-.00068	-.00088	-.00746	.43393	.23157	.11989
10.330	25.626	.01025	.70998	.06670	-.03917	-.00100	-.00101	-.01076	.61129	.36720	.07786
	GRADIENT	.00033	.01631	-.00218	.00141	-.00002	-.00004	-.00001	.01498	-.00192	-.00002

OA105 CFHT109 MODEL 32 O(O) NN52

RCS OFF

(ZH202F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = .000 ELEVON = .000  
 AILRON = .000 BDCLAP = -14.250  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = .000

RUN NO. 16/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCs
10.330	-10.385	-.00201	-.19864	.11645	-.03602	.00031	.00027	-.00295	-.17440	.15035	-.00645
10.330	-5.554	.00062	-.13253	.09945	-.02750	.00004	-.00004	-.00246	-.12228	.11181	-.00636
10.330	-2.240	.00097	-.05387	.08006	-.02520	-.00008	-.00011	-.00271	-.05354	.08028	-.04829
10.330	4.833	.00359	.02231	.06984	-.01694	-.00014	-.00037	-.00289	.01634	.07147	-.04812
10.330	10.056	.00734	.12687	.06503	-.01035	-.00023	-.00067	-.00417	.11357	.08618	-.04812
10.330	15.148	.00962	.26279	.06132	-.00773	-.00039	-.00100	-.00545	.23764	.12786	-.00601
10.330	20.341	.01172	.44440	.06128	-.00448	-.00068	-.00121	-.00804	.39465	.21331	-.00601
10.330	25.585	.00957	.63931	.06002	-.00667	-.00118	-.00128	-.01039	.55071	.33022	-.09032
	GRADIENT	.00052	.01502	-.00201	.00163	-.00001	-.00005	-.00004	.01377	-.00174	.00003

OA105 CFHT109 MODEL 32 O(0) NN51 RCS OFF

(ZH203F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = .000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = .000

RUN NO. 25/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCs
10.330	-10.569	-.00214	-.19964	.11562	-.03630	.00034	.00020	-.00233	-.17505	.15028	.16151
10.330	-5.456	.00064	-.13145	.09832	-.02741	.00011	-.00013	-.00179	-.12150	.11037	.16181
10.330	-.348	.00206	-.05543	.07996	-.02532	-.00006	-.00010	-.00269	-.05494	.08030	.20363
10.330	4.851	.00472	.02175	.06890	-.01722	-.00011	-.00040	-.00259	.01585	.07049	.16161
10.330	10.191	.00764	.12810	.06453	-.01137	-.00019	-.00066	-.00389	.11466	.08618	.20373
10.330	15.188	.01042	.26536	.06179	-.00985	-.00036	-.00097	-.00522	.23990	.12916	.16171
10.330	20.344	.01191	.43959	.06116	-.00869	-.00065	-.00116	-.00784	.39091	.21017	.20373
10.330	25.501	.01037	.63638	.05959	-.01328	-.00118	-.00119	-.01017	.54873	.32776	.16151
	GRADIENT	.00051	.01485	-.00213	.00156	-.00001	-.00006	.00002	.01362	-.00189	-.00809

OA105 CFHT109 MODEL 32 O(0) NN49N52 RCS OFF

(ZH204F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

ALPHA = .000 Q(PSF) = 150.000  
 PCRCs = .000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = .000

RUN NO. 28/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCs
10.330	-5.102	-.27879	-.05294	.08095	-.02368	.00140	.00204	.05164	-.05255	.08121	.07767
10.330	-1.999	-.28076	-.05163	.07964	-.02491	.00049	.00080	.01873	-.05124	.07989	.07767
10.330	.076	-.28211	-.05136	.08086	-.02539	-.00008	-.00007	-.00372	-.05096	.08111	.07786
10.330	2.072	-.28250	-.05384	.08008	-.02472	-.00050	-.00096	-.02433	-.05345	.08035	.07786
10.330	4.911	-.28152	-.05556	.08286	-.02358	-.00139	-.00160	-.05561	-.05515	.08513	.16191
	GRADIENT	-.00010	-.00063	.00041	.00021	-.00027	-.00035	-.01073	-.00063	.00041	.01180

DATE 10 JUN 74

TABULATED SOURCE DATA - OA105

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OA105 CFHT109 MODEL 32 O(O) NN49 RCS OFF

(ZH205F) ( 04 MAY 74 )

## REFERENCE DATA

BREF = 2890.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = .000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = .000

RUN NO. 31/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCs
10.330	-10.488	.00838	-.19863	.11520	-.03597	.00036	.00020	-.00274	-.17432	.14946	.07777
10.330	-5.422	.01197	-.12806	.09804	-.02741	.00012	-.00009	-.00258	-.11823	.10970	.07777
10.330	-3.43	.01303	-.05311	.07989	-.02518	-.00004	-.00011	-.00326	-.05263	.08021	.11999
10.330	4.896	.01488	.02550	.06916	-.01696	-.00012	-.00039	-.00307	.01950	.07109	.07777
10.330	10.008	.01785	.12525	.06419	-.01143	-.00022	-.00071	-.00417	.11219	.08498	.11969
10.330	15.326	.01964	.26908	.06101	-.00987	-.00037	-.00100	-.00547	.24338	.12996	.07805
10.330	20.252	.02006	.43531	.06071	-.00865	-.00065	-.00118	-.00788	.38739	.20764	.07796
10.330	25.391	.01929	.63594	.05983	-.01327	-.00114	-.00118	-.01067	.54886	.32673	.07796
	GRADIENT	.00035	.01500	-.00205	.00157	-.00002	-.00005	.00004	.01377	-.00174	-.00806

OA105 CFHT109 MODEL 32 O(O) NN52 RCS OFF

(ZH206F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2890.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = .000 ELEVON = -20.000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = .000

RUN NO. 34/ 0 RN/L = .97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCs
10.330	-10.632	.00678	-.22988	.12335	-.01662	.00070	.00021	-.00263	-.20318	.16364	.11979
10.330	-5.326	.01080	-.14917	.10127	-.01373	.00028	-.00017	-.00215	-.13913	.11468	.07786
10.330	-2.66	.01104	-.06430	.08263	-.01701	.00006	-.00013	-.00294	-.06391	.08292	.03584
10.330	4.867	.01438	.01657	.07135	-.01020	-.00005	-.00041	-.00295	.01033	.07232	.07805
10.330	9.991	.01704	.11589	.06529	-.00272	-.00017	-.00074	-.00421	.10281	.08440	.11999
10.330	15.326	.01739	.25105	.06119	.00378	-.00033	-.00111	-.00522	.22594	.12538	.03566
10.330	20.449	.02082	.41578	.06120	.01221	-.00053	-.00128	-.00796	.36820	.20261	.12008
10.330	25.563	.01858	.59972	.05944	.01713	-.00098	-.00133	-.01020	.51525	.31258	.07786
	GRADIENT	.00064	.01545	-.00216	.00130	-.00002	-.00005	-.00000	.01419	-.00199	.00807

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TABULATED SOURCE DATA - 0A105

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0A105 CFHT109 MODEL 32 O(0) NN49N52 RCS OFF

(ZH207F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC3 = .000 ELEVON = .000  
 AILRON = 15.000 BCFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = .000

RUN NO. 39/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRC3
10.330	-10.502	-.01343	-.20482	.11832	-.03237	.00531	.00121	-.00423	-.17982	.15367	-.00627
10.330	-5.323	.00228	-.13101	.09943	-.02537	.00381	.00037	-.00344	-.12122	.11115	-.00636
10.330	-3.343	.01162	-.05397	.08242	-.02603	.00286	-.00012	-.00383	-.05348	.08274	.03602
10.330	4.859	.02256	.03077	.07320	-.02152	.00359	-.00111	-.00296	.02446	.07555	-.00636
10.330	9.978	.04050	.13579	.06826	-.01995	.00577	-.00233	-.00323	.12191	.09076	-.00627
10.330	15.338	.07028	.28984	.06791	-.02402	.00932	-.00389	-.00378	.26156	.14215	.03575
10.330	20.280	.10894	.46152	.06964	-.02721	.01296	-.00543	-.00525	.40878	.22529	-.04829
10.330	25.483	.15265	.66898	.07180	-.03470	.01667	-.00695	-.00670	.57301	.35264	-.00609
	GRADIENT	.00210	.01629	-.00177	.00087	.00014	-.00019	.00017	.01498	-.00138	-.00815

0A105 CFHT109 MODEL 32 O(0) NN49N52 RCS OFF

(ZH208F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC3 = .000 ELEVON = .000  
 AILRON = -15.000 BCFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = .000

RUN NO. 41/ 0 RN/L = 1.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRC3
10.330	-10.538	.02263	-.20806	.11827	-.03417	-.00422	-.00064	-.00170	-.18096	.15396	-.04821
10.330	-5.487	.01679	-.13269	.10058	-.02668	-.00346	-.00052	-.00191	-.12246	.11280	-.00609
10.330	-3.362	.00958	-.05495	.08221	-.02675	-.00288	.00001	-.00285	-.05443	.08255	-.00627
10.330	4.838	.00225	.02889	.07133	-.02147	-.00385	.00048	-.00363	.02277	.07351	-.00636
10.330	10.136	-.01304	.14132	.06859	-.02085	-.00653	.00124	-.00564	.12704	.09239	-.00627
10.330	15.116	-.03821	.28695	.06864	-.02518	-.01025	.00228	-.00833	.25912	.14109	.03575
10.330	20.263	-.07678	.46527	.07019	-.02910	-.01463	.00359	-.01197	.41217	.22698	.03575
10.330	25.456	-.12634	.67536	.07258	-.03724	-.01930	.00528	-.01592	.57860	.35582	.03593
	GRADIENT	-.00141	.01612	-.00209	.00102	-.00019	.00009	-.00015	.01485	-.00174	-.00002



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TABULATED SOURCE DATA - OA105

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OA105 CFHT109 MODEL 32 O(O) NN49N52 RCS OFF

(ZH209F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = .000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = .000 RUDDER = 20.000  
 Q-SIN = .000

RUN NO. 43/ 0 RN/L = 1.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCs
10.330	-10.558	.02631	-.19572	.10910	-.04741	.00289	-.00430	.00528	-.17242	.14311	-.00627
10.330	-5.474	.02673	-.12669	.09446	-.03501	.00202	-.00341	.00337	-.11710	.10611	-.04821
10.330	-.319	.02256	-.05193	.07817	-.02984	.00100	-.00198	.00029	-.05149	.07846	-.00601
10.330	4.935	.02148	.02651	.06645	-.01997	.00060	-.00170	-.00070	.02069	.06848	.03667
10.330	10.051	.02169	.12698	.06303	-.01287	.00028	-.00159	-.00257	.11403	.08423	-.00618
10.330	15.368	.01905	.27298	.05993	-.01038	-.00016	-.00138	-.00478	.24734	.13013	-.00618
10.330	20.222	.02035	.43844	.06052	-.00923	-.00050	-.00145	-.00772	.39050	.20834	-.00645
10.330	25.541	.01821	.64785	.05949	-.01419	-.00106	-.00137	-.01050	.55888	.33301	.03602
	GRADIENT	-.00021	.01493	-.00223	.00188	-.00008	.00005	-.00019	.01374	-.00190	.00812

OA105 CFHT109 MODEL 32 O(O) NN49N52 RCS OFF

(ZH210F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = .000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = .000 RUDDER = -20.000  
 Q-SIN = .000

RUN NO. 45/ 0 RN/L = 1.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCs
10.330	-10.645	-.00689	-.19728	.10987	-.04845	-.00129	.00316	-.00794	-.17359	.14442	-.04829
10.330	-5.504	-.00219	-.12845	.09497	-.03550	-.00121	.00223	-.00641	-.11875	.10665	-.04829
10.330	-.353	.00436	-.05397	.07868	-.03018	-.00068	.00101	-.00490	-.05349	.07991	-.00618
10.330	4.834	.00888	.02482	.06685	-.02024	-.00052	.00034	-.00420	.01910	.06870	-.04829
10.330	9.976	.01197	.12737	.06428	-.01348	-.00054	-.00009	-.00537	.11431	.08537	-.00601
10.330	15.184	.01602	.26941	.06118	-.01056	-.00053	-.00072	-.00611	.24398	.12961	-.04821
10.330	20.321	.01907	.44432	.06087	-.00953	-.00076	-.00096	-.00883	.39553	.21139	-.00618
10.330	25.533	.01714	.64880	.05944	-.01456	-.00125	-.00103	-.01117	.55981	.33329	-.00627
	GRADIENT	.00087	.01519	-.00228	.00192	.00003	-.00013	.00013	.01399	-.00199	-.00812

OA105 CFHT109 MODEL 32-O (O)N51

YAW

(ZH201N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = 72.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 50.000

RUN NO. 4/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.528	-.00028	-.20412	.11633	-.03756	.00046	-.00042	.00053	-.17943	.15167	-1.18305
10.330	-5.327	.00173	-.13403	.09638	-.02814	-.00051	-.00124	.00706	-.12450	.10841	-1.14846
10.330	-.293	.00545	-.05488	.08085	-.02579	-.00002	-.00076	-.00034	-.05446	.08113	-.67129
10.330	4.885	.00883	.02356	.06976	-.01792	-.00037	-.00135	.00093	.01753	.07151	.24519
10.330	10.054	.00704	.12294	.06407	-.01090	-.00160	-.00210	.00372	.10987	.08455	1.29946
10.330	15.301	-.00097	.27122	.06059	-.01295	-.00274	-.00156	.00086	.24561	.13002	1.88911
10.330	20.325	-.00307	.44933	.06156	-.01868	-.00313	-.00150	-.00200	.39997	.21380	1.87077
10.330	25.541	-.00840	.65964	.06240	-.02998	-.00360	-.00113	-.00580	.56827	.34071	1.66793
	GRADIENT	.00065	.01515	-.00214	.00152	-.00007	-.00011	.00025	.01390	-.00186	.17699

OA105 CFHT109 MODEL 32-O (O)N51

YAW

(ZH202N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = 179.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 20.000

RUN NO. 5/ 0 RN/L = 1.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.528	.00699	-.19716	.11216	-.03556	.00055	-.00163	.00299	-.17336	.14629	-1.18503
10.330	-5.481	.00121	-.13554	.09286	-.02739	-.00073	-.00189	.01277	-.12605	.10538	-1.19613
10.330	-.384	.01649	-.05718	.07728	-.02679	.00019	-.00312	.00690	-.05666	.07766	-.72952
10.330	4.865	.01937	.01379	.06549	-.01542	-.00072	-.00382	.00761	.00819	.06643	.12323
10.330	9.970	.01187	.10953	.05887	-.01214	-.00223	-.00367	.00856	.09768	.07694	1.26955
10.330	15.174	.00314	.25144	.05739	-.01291	-.00305	-.00265	.00490	.22765	.12121	1.87821
10.330	20.261	-.01207	.42067	.05900	-.01459	-.00494	-.00212	.00184	.37421	.29103	1.86149
10.330	25.487	-.02437	.62823	.06061	-.02504	-.00604	-.00189	.00015	.54113	.32485	1.66575
	GRADIENT	.00055	.01352	-.00225	.00217	-.00017	-.00013	.00014	.01235	-.00214	.16246

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TABULATED SOURCE DATA - 0A105

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0A105 CFHT109 MODEL 32-O (O)N51

YAW

(2H203N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = 504.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 6/ 0 RN/L = 1.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.358	.00431	-.21537	.10790	-.02780	-.00218	-.00372	.02977	-.19246	.14486	-1.32853
10.330	-5.403	.01777	-.14055	.08794	-.02778	-.00064	-.00527	.02386	-.13165	.10078	-1.30626
10.330	-4.413	.03247	-.07930	.07132	-.02720	-.00038	-.00634	.01596	-.07878	.07189	-1.09585
10.330	4.829	.03720	-.00522	.06119	-.02007	.00076	-.00720	.01682	-.01035	.06054	-1.17102
10.330	10.018	.03126	.09818	.05580	-.01182	-.00117	-.00685	.01672	.08697	.07202	1.20756
10.330	15.148	-.00879	.23332	.05437	-.00672	-.00672	-.00370	.01100	.21100	.11345	1.85993
10.330	20.403	-.03777	.41272	.05698	-.00934	-.00943	-.00233	.00827	.36696	.19729	1.86002
10.330	25.661	-.04996	.62196	.05606	-.02051	-.00985	-.00235	.00688	.53549	.32168	1.66470
	GRADIENT	.00090	.01413	-.00193	.00136	.00022	-.00016	.00016	.01305	-.00217	.17643

0A105 CFHT109 MODEL 32-O (O)N49N52

ROLL

(2H204N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = 62.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 50.000

RUN NO. 7/ 0 RN/L = 1.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.540	.00125	-.20231	.11069	-.03251	-.00004	-.00028	-.00103	-.17864	.14583	-1.22503
10.330	-5.286	-.00645	-.13131	.09402	-.02293	-.00175	.00145	-.00389	-.12209	.10572	-1.15490
10.330	-2.273	-.01624	-.05893	.07694	-.02063	-.00295	.00298	-.00782	-.05856	.07722	-.75829
10.330	4.892	-.02905	.01484	.06655	-.01381	-.00438	.00432	-.01005	.00911	.06757	1.13477
10.330	10.103	-.02549	.11678	.05980	-.00970	-.00502	.00252	-.00698	.10447	.07936	1.31648
10.330	15.286	-.00591	.26071	.05660	-.01251	-.00331	-.00089	-.00222	.23656	.12333	1.91811
10.330	20.302	-.01725	.43461	.05849	-.01626	-.00429	.00042	-.00735	.38732	.20565	1.88337
10.330	25.478	-.02379	.64289	.05919	-.02607	-.00492	.00070	-.01047	.55491	.32998	1.68166
	GRADIENT	-.00248	.01428	-.00201	.00132	-.00028	.00026	-.00043	.01310	-.00187	.17291

OA105 CFHT109 MODEL 32-O (O)N49N52 ROLL

(ZH205N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.6100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(P8F) = 150.000  
 PCRCs = 150.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 20.000

RUN NO. 8/ 0 RN/L = 1.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.554	-.01360	-.21118	.10565	-.02380	-.00374	.00380	-.00769	-.18826	.14254	-1.32073
10.330	-5.279	-.04942	-.14330	.08985	-.01127	-.00783	.00961	-.01540	-.13442	.10265	-1.30953
10.330	-.299	-.06028	-.07966	.07263	-.01387	-.00895	.01050	-.02155	-.07928	.07305	-1.08530
10.330	4.847	-.05106	-.00371	.06073	-.00738	-.00827	.00744	-.01608	-.00883	.06020	-1.14671
10.330	10.000	-.02832	.10303	.05306	-.00665	-.00625	.00242	-.00532	.09225	.07014	1.31517
10.330	15.242	-.01821	.24557	.05150	-.00684	-.00527	-.00034	-.00027	.22340	.11425	1.95534
10.330	20.332	-.02782	.41913	.05330	-.01033	-.00637	-.00005	-.00378	.37449	.19561	1.91447
10.330	25.339	-.04462	.62722	.05407	-.02003	-.00771	.00083	-.00780	.54262	.31920	1.69992
	GRADIENT	.00179	.01476	-.00231	.00126	.00013	-.00059	.00106	.01369	-.00250	.18239

OA105 CFHT109 MODEL 32-O (O)N49N52 ROLL

(ZH206N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.6100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(P8F) = 150.000  
 PCRCs = 446.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 9/ 0 RN/L = 1.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.223	-.10168	-.28267	.09280	.01787	-.02252	.02526	-.04030	-.24203	.13795	-1.75446
10.330	-5.289	-.12891	-.19381	.07555	.01962	-.02503	.02732	-.05237	-.18602	.09309	-1.99827
10.330	-.298	-.08578	-.12005	.05428	.00462	-.01759	.01440	-.02547	-.11976	.05490	-2.18141
10.330	4.997	-.03454	-.03663	.04529	.00407	-.01020	.00334	-.00401	-.04043	.04193	-.96433
10.330	9.995	-.03014	.06904	.03980	.00733	-.00827	.00127	-.00050	.06108	.05118	1.19349
10.330	15.146	-.04654	.20875	.03747	.00676	-.00993	.00165	-.00169	.19171	.09071	2.11343
10.330	20.447	-.06742	.39497	.03982	.00332	-.01133	.00182	-.00160	.35617	.17529	2.03187
10.330	25.506	-.07678	.59111	.04019	-.00266	-.01187	.00194	-.00707	.51619	.29081	1.77504
	GRADIENT	.00968	.01576	-.00170	-.00010	.00140	-.00209	.00405	.01499	-.00245	.22994

DATE 19 JUN 74

TABULATED SOURCE DATA - OA105

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OA105 CFHT109 MODEL 32-O (O)N49

PITCH DOWN

(ZH207N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC3 = 62.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 50.000

RUN NO. 10/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.543	.00943	-.20092	.11355	-.03378	.00018	-.00157	.00142	-.17674	.14840	-1.19099
10.330	-5.477	.01042	-.13292	.09575	-.02540	-.00021	-.00198	.00255	-.12318	.10799	-1.14059
10.330	-2.259	.00751	-.05527	.07865	-.02328	-.00076	-.00138	.00123	-.05492	.07890	-.69605
10.330	4.908	.00632	.02104	.06836	-.01399	-.00160	-.00145	.00100	.01512	.06991	.21625
10.330	10.171	.00487	.12524	.06231	-.00842	-.00241	-.00172	.00103	.11227	.08344	1.34549
10.330	15.104	.00089	.25904	.05882	-.01065	-.00295	-.00171	-.00047	.23477	.12428	1.88895
10.330	20.357	-.00080	.44302	.05922	-.01606	-.00311	-.00163	-.00330	.39475	.20963	1.88308
10.330	25.618	-.00611	.65453	.06009	-.02746	-.00360	-.00157	-.00626	.56420	.33718	1.67330
	GRADIENT	-.00023	.01477	-.00199	.00180	-.00016	-.00001	-.00004	.01356	-.00174	.17656

OA105 CFHT109 MODEL 32-O (O)N49

PITCH DOWN

(ZH208N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC3 = 158.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 20.000

RUN NO. 11/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.318	.01841	-.20497	.10861	-.02785	-.00086	-.00331	.00685	-.18220	.14357	-1.26908
10.330	-5.523	.01260	-.13966	.08994	-.02025	-.00166	-.00268	.00872	-.13036	.10296	-1.26605
10.330	-2.262	.01074	-.06593	.07335	-.01564	-.00233	-.00227	.00571	-.06559	.07365	-.89065
10.330	4.917	.00693	.01532	.06305	-.00860	-.00277	-.00214	.00430	.00986	.06413	.15377
10.330	10.167	-.00009	.11746	.05649	-.00349	-.00388	-.00207	.00396	.10564	.07634	1.38387
10.330	15.115	-.00514	.25187	.05314	-.00659	-.00430	-.00211	.00318	.22930	.11698	1.96016
10.330	20.394	-.01202	.43398	.05418	-.00937	-.00529	-.00218	.00046	.38790	.20201	1.92016
10.330	25.650	-.02103	.64362	.05472	-.02015	-.00617	-.00233	-.00162	.55651	.32792	1.69708
	GRADIENT	-.00074	.01569	-.00199	.00136	-.00008	.00003	-.00027	.01457	-.00184	.20166

OA105 CFHT109 MODEL 32-0 (O)N49

PITCH DOWN

(ZH209N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC5 = 446.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 12/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.447	.03711	-.23970	.09561	-.00290	-.00636	-.00620	.02706	-.21839	.13749	-1.58838
10.330	-5.408	.01868	-.16749	.07444	.00217	-.00697	-.00416	.02181	-.15973	.08990	-1.77682
10.330	-1.149	.02261	-.08874	.05887	.00175	-.00595	-.00470	.01267	-.08859	.05910	-1.49889
10.330	5.035	.01724	-.00602	.04852	.00855	-.00587	-.00470	.01165	-.01025	.04781	-.21447
10.330	10.095	.00555	.09925	.04189	.00817	-.00616	-.00432	.01102	.09037	.05864	1.54110
10.330	15.238	-.01039	.23852	.03933	.00743	-.00768	-.00402	.01083	.21980	.10063	2.18418
10.330	20.373	-.02006	.41131	.04026	.00544	-.00853	-.00416	.00965	.37156	.18094	2.05356
10.330	25.420	-.03423	.61180	.04161	-.00308	-.00975	-.00455	.00856	.53471	.30020	1.78115
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

OA105 CFHT109 MODEL 32-0 (O)N52

PITCH UP

(ZH210N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC5 = 62.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 50.000

RUN NO. 13/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.599	-.00881	-.20225	.11456	-.03576	.00025	.00138	-.00518	-.17772	.14981	-1.18633
10.330	-5.269	-.01863	-.12955	.09792	-.02560	-.00134	.00323	-.00908	-.12001	.10940	-1.09699
10.330	-1.326	-.02201	-.05789	.07983	-.02432	-.00202	.00409	-.01190	-.05743	.08016	-.71651
10.330	4.853	-.03691	.02011	.07076	-.01641	-.00359	.00590	-.01446	.01405	.07221	.19460
10.330	10.015	-.02799	.12558	.06391	-.01543	-.00325	.00412	-.01337	.11256	.08478	1.32766
10.330	15.286	-.00440	.27729	.06182	-.02005	-.00153	.00083	-.00937	.25118	.13274	1.89227
10.330	20.364	-.01231	.45522	.06330	-.02346	-.00250	.00172	-.01376	.40474	.21775	1.85874
10.330	25.457	-.01688	.66108	.06441	-.03372	-.00312	.00198	-.01675	.56921	.34231	1.66285
	GRADIENT	-.00288	.01506	-.00175	.00153	-.00030	.00035	-.00049	.01385	-.00154	.17592

OA105 CFHT109 MODEL 32-O (O)N52

PITCH UP

(ZH211N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC5 = 150.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 20.000

RUN NO. 14/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.592	-.03357	-.20472	.11405	-.03268	-.00241	.00687	-.01623	-.18037	.14961	-1.20558
10.330	-5.232	-.06194	-.13423	.09946	-.01885	-.00607	.01203	-.02618	-.12460	.11128	-1.11966
10.330	-3.362	-.07326	-.06458	.08155	-.01965	-.00724	.01307	-.02925	-.06407	.08196	-.78170
10.330	4.841	-.07252	.01249	.06964	-.01609	-.00711	.01149	-.02547	.00656	.07045	.09316
10.330	10.101	-.03596	.12278	.06121	-.01670	-.00398	.00520	-.01528	.11014	.08180	1.34649
10.330	15.090	-.00707	.26735	.06071	-.02134	-.00160	.00130	-.01032	.24233	.12822	1.88991
10.330	20.447	-.01258	.45330	.06209	-.02448	-.00247	.00188	-.01455	.40305	.21654	1.86136
10.330	25.528	-.02421	.66005	.06292	-.03453	-.00361	.00285	-.01880	.56850	.34123	1.66600
	GRADIENT	.00014	.01481	-.00229	.00068	.00002	-.00030	.00073	.01357	-.00221	.16815

OA105 CFHT109 MODEL 32-O (O)N52

PITCH UP

(ZH212N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC5 = 446.000 ELEVON = .000  
 AILRON = .000 BDFLAP = 13.750  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 15/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.364	-.13576	-.22542	.11297	-.01596	-.01504	.03037	-.06443	-.20089	.15238	-1.31837
10.330	-5.299	-.16012	-.15455	.09521	-.01236	-.01954	.03347	-.07626	-.14510	.10907	-1.33029
10.330	-2.260	-.13307	-.07980	.07729	-.02307	-.01384	.02339	-.04847	-.07945	.07765	-1.02317
10.330	4.957	-.06975	.00148	.06468	-.01973	-.00730	.01107	-.02426	-.00411	.06456	-.06367
10.330	9.937	-.03813	.10625	.05866	-.01719	-.00414	.00549	-.01431	.09453	.07611	1.24199
10.330	15.272	-.03951	.26046	.05815	-.02069	-.00430	.00528	-.01660	.23595	.12470	1.89216
10.330	20.447	-.04070	.44192	.06082	-.02548	-.00418	.00575	-.02178	.39283	.21136	1.85854
10.330	25.523	-.04960	.65004	.06118	-.03454	-.00515	.00629	-.02583	.56024	.33530	1.67086
	GRADIENT	.01214	.01558	-.00242	.00064	.00125	-.00236	.00464	.01444	-.00251	.18392

OA105 CFHT109 MODEL 32-O (O)N52

PITCH UP

(ZH213N) (04 MAY 74)

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(Psf) = 150.000  
 PCRCs = 158.000 ELEVON = .000  
 AILRON = .000 BDFLAP = -14.250  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 20.000

RUN NO. 17/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.492	-.03472	-.20427	.11341	-.03217	-.00254	.00699	-.01627	-.18020	.14871	-1.21175
10.330	-5.392	-.06194	-.13791	.09956	-.01832	-.00606	.01206	-.02610	-.12794	.11208	-1.14159
10.330	-.273	-.07371	-.06577	.08066	-.01857	-.00734	.01320	-.02914	-.06539	.08097	-.80757
10.330	4.903	-.07206	.01154	.06919	-.01378	-.00707	.01142	-.02529	.00558	.06993	.07980
10.330	9.987	-.03594	.11301	.06048	-.01132	-.00403	.00526	-.01520	.10081	.07916	1.27351
10.330	15.179	-.00591	.25820	.05892	-.01025	-.00156	.00120	-.01007	.23377	.12447	1.87810
10.330	20.298	-.01267	.42835	.05895	-.00577	-.00237	.00173	-.01398	.38130	.20389	1.87016
10.330	25.567	-.02209	.63111	.05860	-.00674	-.00351	.00264	-.01840	.54403	.32523	1.67275
	GRADIENT	.00032	.01494	-.00222	.00093	.00005	-.00034	.00074	.01371	-.00213	.17144

OA105 CFHT109 MODEL 32-O (O)N52

PITCH UP

(ZH214N) (04 MAY 74)

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(Psf) = 150.000  
 PCRCs = 446.000 ELEVON = .000  
 AILRON = .000 BDFLAP = -14.250  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 18/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.596	-.13639	-.22465	.11264	-.01586	-.01495	.03031	-.06443	-.20011	.15203	-1.31621
10.330	-5.336	-.16182	-.15399	.09497	-.01195	-.01959	.03360	-.07641	-.14449	.10888	-1.32711
10.330	-.304	-.13372	-.08112	.07720	-.02252	-.01396	.02362	-.04906	-.08071	.07763	-1.03962
10.330	4.881	-.07264	-.00164	.08449	-.01778	-.00746	.01134	-.02472	-.00712	.06412	-.11100
10.330	9.943	-.03831	.10021	.05795	-.01186	-.00414	.00551	-.01446	.08870	.07438	1.19252
10.330	15.159	-.03875	.24593	.05647	-.00961	-.00431	.00522	-.01636	.22261	.11882	1.87356
10.330	20.320	-.03905	.42048	.05790	-.00717	-.00417	.00567	-.02175	.37420	.20031	1.86813
10.330	25.653	-.04824	.62701	.05665	-.00735	-.00508	.00613	-.02552	.54068	.32252	1.67644
	GRADIENT	.01178	.01533	-.00245	.00091	.00125	-.00237	.00469	.01419	-.00261	.17910



DATE 19 JUN 74

TABULATED SOURCE DATA - OA105

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OA105 CFHT109 MODEL 32-O (O)N49

PITCH DOWN

(ZH215N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = 158.000 ELEVON = .000  
 AILRON = .000 BDFLAP = -14.250  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 20.000

RUN NO. 19/ 0 RN/L = 1.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.505	.02486	-.21574	.11167	-.02871	-.00097	-.00416	.00984	-.19176	.14913	-1.28586
10.330	-5.272	.01745	-.14263	.09231	-.02038	-.00202	-.00326	.01130	-.13354	.10503	-1.27149
10.330	-.329	.01545	-.07360	.07499	-.01394	-.00265	-.00310	.00873	-.07317	.07542	-.97027
10.330	4.864	.01164	.00607	.06338	-.00540	-.00327	-.00277	.00635	.00067	.06367	.01058
10.330	10.053	.00357	.10700	.05560	.00455	-.00347	-.00202	.00398	.09565	.07342	1.30275
10.330	-15.380	-.00453	.25414	.05325	.00834	-.00490	-.00240	.00454	.23092	.11874	1.94464
10.330	20.455	-.01119	.42783	.05255	.01020	-.00555	-.00249	.00217	.38249	.19874	1.92452
10.330	25.785	-.01558	.63603	.05210	.00796	-.00607	-.00284	.00003	.55005	.32356	1.70001
	GRADIENT	-.00073	.01534	-.00224	.00164	-.00012	.00006	-.00046	.01422	-.00226	.18888

OA105 CFHT109 MODEL 32-O (O)N49

PITCH DOWN

(ZH216N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = 446.000 ELEVON = .000  
 AILRON = .000 BDFLAP = -14.250  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 20/ 0 RN/L = 1.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.504	.03100	-.25208	.09636	.00299	-.00785	-.00792	.03206	-.23029	.14070	-1.63677
10.330	-5.240	.03389	-.17344	.07405	.00575	-.00800	-.00615	.02454	-.16596	.08958	-1.85266
10.330	-.274	.03398	-.10007	.05949	.00652	-.00729	-.00651	.01539	-.09978	.05996	-1.66404
10.330	4.962	.02750	-.01778	.04886	.01415	-.00674	-.00663	.01508	-.02194	.04714	-.46537
10.330	10.208	.01646	.08762	.04204	.01889	-.00710	-.00653	.01542	.07879	.05690	1.38460
10.330	15.234	-.00028	.21984	.03883	.02398	-.00849	-.00619	.01487	.20191	.09523	2.12014
10.330	20.593	-.01746	.39417	.03928	.03005	-.00999	-.00635	.01405	.35517	.17541	2.02480
10.330	25.497	-.03261	.57714	.04009	.03141	-.01135	-.00673	.01293	.50368	.28462	1.76967
	GRADIENT	-.00124	.01572	-.00203	.00146	.00011	-.00002	-.00006	.01487	-.00245	.22893

0A105 CFHT109 MODEL 32-0 (O)N49N52 ROLL

(2H217N) ( 04 MAY 74 )

## REFERENCE DATA

```

BREF = 2690.0000 SQ.FT.  XMRP = 1076.6700 IN. XO
LREF = 474.8100 IN.      YMRP = .0000 IN. YO
BREF = 936.6800 IN.      ZMRP = 375.0000 IN. ZO
SCALE = .0100

```

### PARAMETRIC DATA

BETA	=	.000	Q (PSF)	=	150.000
PCRC5	=	150.000	ELEVON	=	.000
AILRON	=	.000	BDFLAP	=	-14.250
SPCBRK	=	55.000	RUDDER	=	.000
Q-SIM	=	20.000			

RUN NO. 21/ 0 RN/L = 1.02 GRADIENT INTERVAL = -5.00/ 5.00

NACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.606	-.00321	-.21389	.10487	-.02093	-.00401	.00251	-.00481	-.19093	.14243	-1.34034
10.330	-5.273	-.04346	-.14560	.08912	-.00858	-.00811	.00860	-.01305	-.13679	.10212	-1.33945
10.330	-.284	-.05501	-.08545	.07149	-.00955	-.00947	.00964	-.01964	-.08509	.07191	-1.18327
10.330	4.884	-.04328	-.00993	.05951	-.00223	-.00862	.00650	-.01396	-.01496	.05845	-.25603
10.330	10.170	-.02413	.09749	.05138	.00082	-.00622	.00151	-.00306	.08688	.06778	1.28182
10.330	15.155	-.01702	.22631	.04978	.00530	-.00596	-.00069	.00056	.20543	.10721	1.91613
10.330	20.491	-.02597	.40359	.05061	.00914	-.00662	-.00056	-.00227	.36033	.18868	1.90972
10.330	25.601	-.03946	.59835	.05007	.00874	-.00768	.00006	-.00598	.51797	.30370	1.70556
	GRADIENT	.00188	.01461	-.00232	.00142	.00016	-.00061	.00110	.01357	-.00260	-.17942

0A105 CFHT109 MODEL 32-0 (O)N49N52 ROLL

(ZH218N) ( 04 MAY 74 )

## REFERENCE DATA

```

SREF = 2690.0000 SQ.FT.   XMRP = 1076.6700 IN. XO
LREF = 474.8100 IN.       YMRP = .0000 IN. YO
BREF = 936.6800 IN.       ZMRP = 375.0000 IN. ZO
SCALE = .0100

```

## PARAMETRIC DATA

BETA	=	.000	Q (PSF)	=	150.000
PCRC5	=	446.000	ELEVON	=	.000
AILRON	=	.000	BCFLAP	=	-14.250
SPDBRK	=	55.000	RUDDER	=	.000
Q-SIM	=	7.000			

RUN NO. 22/ 0 RN/L = 1.01 GRADIENT INTERVAL = -5.00/ 5.00

[illegible]

OA105 CFHT109 MODEL 32-O (O)N51

YAW

(ZH219N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = 179.000 ELEVON = .000  
 AILRON = .000 BDFLAP = -14.250  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 20.000

RUN NO. 23/ 0 RN/L = 1.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.540	.00944	-.19818	.11230	-.03546	.00047	-.00164	.00253	-.17430	.14665	-1.18848
10.330	-5.219	.00450	-.13257	.09185	-.02679	-.00075	-.00199	.01259	-.12367	.10352	-1.19457
10.330	-.238	.01938	-.05706	.07667	-.02545	.00023	-.00336	.00699	-.05674	.07691	-.73775
10.330	4.981	.02216	.01549	.06482	-.01298	-.00066	-.00392	.00738	.00980	.06592	.14870
10.330	10.052	.01408	.10783	.05796	-.00682	-.00220	-.00382	.00808	.09606	.07589	1.26575
10.330	15.367	.00396	.24837	.05612	-.00147	-.00323	-.00279	.00428	.22462	.11993	1.87297
10.330	20.265	-.00860	.40956	.05635	.00376	-.00496	-.00236	.00172	.36469	.19472	1.87294
10.330	25.573	-.02158	.61140	.05578	.00215	-.00612	-.00216	.00014	.52742	.31424	1.67843
	GRADIENT	.00053	.01390	-.00227	.00239	-.00017	-.00011	.00007	.01275	-.00211	.16985

OA105 CFHT109 MODEL 32-O (O)N51

YAW

(ZH220N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = 504.000 ELEVON = .000  
 AILRON = .000 BDFLAP = -14.250  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 24/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.668	.00728	-.22276	.10855	-.02631	-.00254	-.00377	.03007	-.19882	.14791	-1.34421
10.330	-5.284	.02012	-.14222	.08741	-.02695	-.00070	-.00534	.02312	-.13357	.10014	-1.33386
10.330	-.391	.03249	-.08098	.07154	-.02646	-.00042	-.00629	.01540	-.08049	.07210	-1.11641
10.330	4.865	.03970	-.00667	.06148	-.01805	.00085	-.00725	.01637	-.01186	.06070	-.19548
10.330	10.190	.03211	.09774	.05503	-.00638	-.00130	-.00692	.01645	.08646	.07146	1.20999
10.330	15.186	-.00699	.22587	.05311	.00448	-.00680	-.00401	.01114	.20407	.11042	1.84807
10.330	20.354	-.03482	.39488	.05450	.00942	-.00943	-.00269	.00864	.35126	.18845	1.86401
10.330	25.519	-.04680	.59198	.05404	.00733	-.00989	-.00268	.00727	.51095	.30380	1.68183
	GRADIENT	.00137	.01414	-.00191	.00160	.00024	-.00018	.00018	.01306	-.00217	.17521

0A105 CFHT109 MODEL 32-O (O)N51

YAW

(ZH221N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = 504.000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 26/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.621	.00651	-.22159	.10917	-.02699	-.00247	-.00364	.02958	-.19767	.14814	-1.33431
10.330	-5.302	.01880	-.14082	.08836	-.02789	-.00069	-.00520	.02277	-.13295	.10099	-1.30748
10.330	-2.295	.03301	-.07812	.07221	-.02695	-.00038	-.00629	.01549	-.07775	.07261	-1.07075
10.330	4.931	.03860	-.00458	.06155	-.01833	.00086	-.00726	.01637	-.00985	.06093	-.16164
10.330	9.936	.03256	.09486	.05395	-.00796	-.00116	-.00701	.01654	.08378	.07148	1.17214
10.330	15.320	-.00795	.23252	.05380	.00210	-.00685	-.00387	.01069	.21004	.11332	1.85348
10.330	20.494	-.03578	.40269	.05414	.00518	-.00942	-.00264	.00844	.35825	.19170	1.86880
10.330	25.578	-.04890	.60292	.05413	.00044	-.00990	-.00257	.00679	.52046	.30913	1.68364
	GRADIENT	.00107	.01407	-.00204	.00165	.00024	-.00019	.00017	.01299	-.00223	.17396

0A105 CFHT109 MODEL 32-O (O)N49N52

ROLL

(ZH222N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = 446.000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 27/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.402	-.09725	-.27167	.09376	.02193	-.02333	.02488	-.03876	-.25028	.14127	-1.77165
10.330	-5.314	-.12720	-.20023	.07627	.02399	-.02600	.02740	-.05260	-.19231	.09449	-2.03529
10.330	-2.289	-.08036	-.12403	.05480	.00772	-.01800	.01364	-.02407	-.12375	.05543	-2.23265
10.330	4.946	-.03085	-.04419	.04564	.00856	-.01089	.00281	-.00358	-.04796	.04166	-1.15126
10.330	10.042	-.02673	.06157	.03971	.01460	-.00894	.00072	-.00075	.05370	.04984	1.07758
10.330	15.223	-.04748	.20277	.03711	.01832	-.01059	.00115	-.00055	.18591	.08905	2.08767
10.330	20.402	-.06593	.37465	.03786	.02063	-.01222	.00119	-.00070	.33795	.16609	2.03479
10.330	25.592	-.08024	.57210	.03765	.02127	-.01302	.00148	-.00621	.49971	.28108	1.77783
	GRADIENT	.00946	.01525	-.00175	.00016	.00136	-.00207	.00391	.01448	-.00263	.20657

DATE 19 JUN 74

TABULATED SOURCE DATA - OA105

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OA105 CFHT109 MODEL 32-O (O)N49N52 ROLL

(ZH223N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

ALPHA = .000 Q (PSF) = 150.000  
 PCRCs = 446.000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 29/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-5.137	-.21789	-.11967	.05592	.01684	-.01730	.01633	.01501	-.11945	.05637	-2.11899
10.330	-2.082	-.23701	-.12271	.05424	.00855	-.01661	.01392	-.00819	-.12248	.05475	-2.23725
10.330	.001	-.23141	-.12291	.05437	.00793	-.01786	.01337	-.02424	-.12269	.05487	-2.23601
10.330	1.995	-.21648	-.11898	.05491	.00869	-.01916	.01346	-.04148	-.11877	.05536	-2.14564
10.330	4.799	-.18052	-.10776	.05673	.01166	-.02219	.01822	-.07504	-.10758	.05707	-1.88506
	GRADIENT	.00832	.00223	.00036	.00047	-.00081	.00061	-.00971	.00222	.00034	.05229

OA105 CFHT109 MODEL 32-O (O)N49

PITCH DOWN

(ZH224N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = 446.000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 30/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.498	.05931	-.24797	.09509	.00213	-.00724	-.00663	.02828	-.22650	.13868	-1.63319
10.330	-5.407	.04046	-.17324	.07363	.00524	-.00760	-.00461	.02171	-.16553	.08963	-1.84683
10.330	-.154	.04459	-.09568	.05801	.00508	-.00675	-.00521	.01285	-.09552	.05826	-1.63945
10.330	4.908	.03789	-.01653	.04828	.01242	-.00643	-.00531	.01216	-.02060	.04669	-.44124
10.330	10.101	.02693	.09101	.04143	.01553	-.00685	-.00509	.01185	.08233	.05675	1.45081
10.330	15.208	.00984	.22297	.03783	.01885	-.00824	-.00484	.01185	.20324	.09498	2.16078
10.330	20.630	-.00572	.40041	.03863	.02327	-.00954	-.00496	.01057	.36112	.17723	2.03763
10.330	25.662	-.02314	.59321	.03875	.02177	-.01104	-.00531	.00963	.51792	.29182	1.77480
	GRADIENT	-.00132	.01564	-.00192	.00145	.00006	-.00002	-.00014	.01480	-.00229	.23671

0A105 CFHT109 MODEL 32-0 (O)N49

PITCH DOWN

(ZH225N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = 158.000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 20.000

RUN NO. 32/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.288	.03267	-.20522	.10749	-.02560	-.00113	-.00369	.00742	-.18273	.14241	-1.28308
10.330	-5.446	.02346	-.14057	.08852	-.01837	-.00197	-.00288	.00945	-.13154	.10147	-1.29638
10.330	-3.313	.02298	-.06980	.07282	-.01383	-.00248	-.00263	.00657	-.06940	.07320	-.94811
10.330	4.872	.01918	.00936	.06234	-.00556	-.00303	-.00237	.00447	.00403	.06291	.06413
10.330	10.158	.01100	.11089	.05523	.00171	-.00406	-.00214	.00374	.00941	.07392	1.34485
10.330	15.144	.00314	.23987	.05119	.00357	-.00473	-.00226	.00327	.21816	.11208	1.94655
10.330	20.488	-.00461	.41919	.05124	.00550	-.00550	-.00238	.00086	.37474	.19473	1.92444
10.330	25.535	-.01298	.61492	.05068	.00130	-.00629	-.00251	-.00123	.53301	.31080	1.71498
	GRADIENT	-.00073	.01527	-.00202	.00159	-.00011	.00005	-.00041	.01416	-.00198	.19522

0A105 CFHT109 MODEL 32-0 (O)N52

PITCH UP

(ZH226N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = 446.000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 33/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.555	-.12513	-.22384	.11221	-.01573	-.01508	.03034	-.06471	-.19955	.15125	-1.31938
10.330	-5.244	-.16078	-.15147	.09760	-.00420	-.01086	.03396	-.07004	-.14192	.11103	-1.27820
10.330	-2.281	-.12299	-.08032	.07664	-.02230	-.01398	.02362	-.04916	-.07994	.07703	-1.03783
10.330	4.914	-.06113	.00039	.06416	-.01769	-.00746	.01134	-.02488	-.00511	.06396	-.07984
10.330	9.977	-.02956	.10183	.05744	-.01258	-.00417	.00561	-.01472	.09034	.07421	1.21725
10.330	15.145	-.03012	.24574	.05577	-.01150	-.00438	.00529	-.01657	.22264	.11803	1.88629
10.330	20.472	-.03349	.42910	.05791	-.01069	-.00428	.00573	-.02177	.38175	.20433	1.86826
10.330	25.523	-.04102	.62583	.05655	-.01349	-.00515	.00621	-.02531	.54039	.32068	1.68513
	GRADIENT	.01191	.01554	-.00240	.00089	.00126	-.00236	.00467	.01440	-.00252	.18441

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TABULATED SOURCE DATA - OA105

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OA105 CFHT109 MODEL 32-O (O)N52

PITCH UP

(ZH227N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 38.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(P8F) = 150.000  
 PCRCs = 446.000 ELEVON = -20.000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 35/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.583	-.12769	-.25548	.11989	.00458	-.01558	.03117	-.06648	-.22912	.16478	-1.39030
10.330	-5.323	-.15432	-.17599	.09937	.00023	-.01947	.03379	-.07517	-.16602	.11527	-1.44029
10.330	-.294	-.11899	-.09369	.07908	-.01353	-.01365	.02288	-.04748	-.09329	.07956	-1.17259
10.330	4.904	-.05621	-.01194	.08565	-.01032	-.00719	.01063	-.02337	-.01750	.06439	-.27185
10.330	9.975	-.02774	.09111	.05900	-.00364	-.00425	.00556	-.01510	.07951	.07389	1.07609
10.330	15.181	-.02924	.22876	.05660	.00205	-.00433	.00519	-.01661	.20595	.11453	1.79819
10.330	20.341	-.03275	.39222	.05786	.00994	-.00416	.00560	-.02156	.34765	.19059	1.82404
10.330	25.555	-.03846	.58220	.05660	.01738	-.00480	.00619	-.02577	.50082	.30222	1.65717
	GRADIENT	.01208	.01573	-.00258	.00062	.00124	-.00236	.00464	.01458	-.00292	.17329

OA105 CFHT109 MODEL 32-O (O)N49

PITCH DOWN

(ZH228N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 38.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(P8F) = 150.000  
 PCRCs = 446.000 ELEVON = -20.000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 36/ 0 RN/L = .97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.559	.03669	-.26680	.10377	.01342	-.00416	-.00564	.02626	-.24326	.15090	-1.61206
10.330	-5.239	.02980	-.17796	.07872	.01033	-.00512	-.00421	.01909	-.17003	.09464	-1.79653
10.330	-.172	.03289	-.10190	.06160	.00754	-.00527	-.00485	.01196	-.10172	.06191	-1.64298
10.330	4.894	.02902	-.02148	.05068	.01527	-.00574	-.00515	.01206	-.02573	.04866	-1.52867
10.330	10.078	.01735	.08178	.04127	.02010	-.00614	-.00514	.01261	.07330	.05494	1.33413
10.330	15.426	.00673	.22038	.03802	.02698	-.00643	-.00590	.01262	.20233	.09527	2.12369
10.330	20.626	.00034	.38485	.03814	.03700	-.00647	-.00550	.01253	.34675	.17126	2.02465
10.330	25.650	-.00916	.56484	.03654	.04284	-.00727	-.00609	.01232	.49336	.27744	1.77827
	GRADIENT	-.00076	.01587	-.00216	.00153	-.00009	-.00006	.00002	.01500	-.00262	.21996

DATE 19 JUN 74

## TABULATED SOURCE DATA - OA105

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OA105 CFMT109 MODEL 32-O (O)N49N52 ROLL

(ZH229N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC5 = 446.000 ELEVON = -20.000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 37/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.459	-.09812	-.29327	.10331	.03389	-.02009	.02569	-.04098	-.26964	.15483	-1.74150
10.330	-5.201	-.11567	-.20927	.08093	.02644	-.02279	.02648	-.05265	-.20107	.09957	-2.01939
10.330	-1.164	-.06794	-.12893	.05781	.01060	-.01582	.01307	-.02354	-.12876	.05817	-2.21336
10.330	5.057	-.02103	-.04894	.04814	.01306	-.00999	.00281	-.00344	-.05300	.04364	-1.21437
10.330	10.038	-.01488	.05624	.04163	.01916	-.00839	.00031	.00023	.04812	.05080	.94736
10.330	15.362	-.03288	.19802	.03749	.02699	-.00905	.00082	.00072	.18101	.00861	2.04276
10.330	20.478	-.04363	.36396	.03768	.03563	-.00940	.00064	.00137	.32778	.16263	2.01552
10.330	25.607	-.05157	.54587	.03616	.04273	-.00942	.00066	-.00311	.47663	.26853	1.77498
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

OA105 CFMT109 MODEL 32-O (O)N51 YAW

(ZH230N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC5 = 504.000 ELEVON = -20.000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = 55.000 RUDDER = .000  
 Q-SIM = 7.000

RUN NO. 38/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.556	.01003	-.25065	.11803	-.00895	-.00191	-.00305	.02924	-.22478	.16195	-1.38801
10.330	-5.278	.02899	-.15994	.09345	-.01802	.00030	-.00525	.01933	-.15067	.10776	-1.39817
10.330	-2.254	.03866	-.08524	.07453	-.02304	.00152	-.00588	.01454	-.08491	.07491	-1.13352
10.330	4.943	.04678	-.01026	.06280	-.01451	.00271	-.00668	.01500	-.01564	.06168	-2.25353
10.330	10.050	.04167	.08961	.05600	-.00191	.00021	-.00677	.01603	.07847	.07078	1.10865
10.330	15.348	.00459	.22483	.05379	.01012	-.00500	-.00373	.01069	.20257	.11138	1.81870
10.330	20.390	-.01441	.38687	.05409	.01921	-.00655	-.00275	.00896	.34379	.18549	1.85344
10.330	25.757	-.02737	.58305	.05335	.02557	-.00725	-.00252	.00667	.50193	.30142	1.66523
	GRADIENT	.00156	.01442	-.00226	.00164	.00023	-.00015	.00009	.01332	-.00254	.16926



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(ZH231N) ( 04 MAY 74 )

### PARAMETRIC DATA

BETA	=	.000	Q (PSF)	=	150.000
PCRC5	=	150.000	ELEVON	=	.000
AILRON	=	15.000	BCFLAP	=	.000
SPCBRK	=	55.000	RUDDER	=	.000
Q-SIM	=	20.000			

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.724	-.02245	-.22406	.11002	-.02119	.00155	.00441	-.00886	-.19968	.14979	-1.33302
10.330	-5.419	-.04880	-.15556	.09251	-.00734	-.00451	.01024	-.01708	-.14613	.10679	-1.36843
10.330	-.197	-.05019	-.08296	.07584	-.01197	-.00657	.01022	-.02024	-.08271	.07413	-1.11581
10.330	4.982	-.03449	-.00246	.06169	-.00634	-.00521	.00675	-.01507	-.00789	.06124	-.12742
10.330	10.010	.00173	.10500	.05527	-.00702	-.00121	.00086	-.00373	.09378	.07269	1.29022
10.330	15.163	.03859	.25163	.05534	-.01014	.00349	-.00300	.00158	.22839	.11923	1.91554
10.330	20.303	.06747	.43174	.05836	-.01280	.00691	-.00410	-.00082	.38466	.20454	1.88060
10.330	25.515	.09910	.64283	.06082	-.01928	.00987	-.00469	-.00418	.55394	.33179	1.66955
	GRADIENT	.00303	.01554	-.00235	.00109	.00026	-.00067	.00100	.01446	-.00249	.19085

(2H232N) ( 04 MAY 74 )

### PARAMETRIC DATA

BETA	=	.000	Q (PSF)	=	150.000
PCRCs	=	158.000	ELEVON	=	.000
AILRON	=	-15.000	BDFLAP	=	.000
SPDBRK	=	55.000	RUDDER	=	.000
Q-SIM	=	20.000			

[illegible]

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TABULATED SOURCE DATA - 0A105

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0A105 CFHT109 MODEL 32-0 (O)N49N52 ROLL

(ZH233N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = 158.000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = .000 RUDDER = 20.000  
 Q-SIM = 20.000

RUN NO. 44/ 0 RN/L = 1.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.671	.04084	-.21088	.09823	-.03591	.00131	-.00596	.00937	-.18905	.13558	-1.39441
10.330	-5.356	.02869	-.13888	.08138	-.02533	-.00064	-.00365	.00906	-.13068	.09399	-1.39037
10.330	-.264	-.00773	-.07439	.06518	-.02247	-.00505	.00337	-.00880	-.07409	.06552	-1.13070
10.330	5.018	-.02864	-.00151	.05677	-.00820	-.00756	.00538	-.01265	-.00647	.05642	-.11472
10.330	10.018	-.01793	.10069	.05133	-.00294	-.00648	.00192	-.00494	.00922	.06807	1.32553
10.330	15.362	-.01002	.24444	.04937	.00046	-.00581	-.00037	-.00145	.22262	.11237	1.98125
10.330	20.408	-.02044	.41499	.04990	.00315	-.00669	-.00020	-.00435	.37154	.19147	1.94047
10.330	25.518	-.03479	.61299	.04903	-.00017	-.00776	.00038	-.00772	.53207	.30832	1.72569
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

0A105 CFHT109 MODEL 32-0 (O)N49N52 ROLL

(ZH234N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = 158.000 ELEVON = .000  
 AILRON = .000 BDFLAP = .000  
 SPDBRK = .000 RUDDER = -20.000  
 Q-SIM = 20.000

RUN NO. 46/ 0 RN/L = 1.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
10.330	-10.524	-.00544	-.20860	.09822	-.03555	-.00433	.00421	-.00798	-.18715	.13467	-1.38969
10.330	-5.407	-.03397	-.14166	.08394	-.02218	-.00762	.00854	-.01292	-.13312	.09691	-1.37359
10.330	-.299	-.03511	-.07889	.06868	-.01809	-.00976	.01129	-.02254	-.07853	.06910	-1.13654
10.330	4.906	-.04626	-.00422	.05931	-.00631	-.00908	.00811	-.01739	-.00928	.05873	-.15794
10.330	9.994	-.02265	.09758	.05204	-.00165	-.00671	.00248	-.00559	.08707	.06819	1.27690
10.330	15.165	-.01243	.23784	.05006	.00096	-.00600	.00013	-.00197	.21646	.11054	1.95828
10.330	20.336	-.01995	.41165	.05064	.00367	-.00674	.00008	-.00468	.36839	.19054	1.93345
10.330	25.602	-.03514	.62026	.05011	.00007	-.00786	.00062	-.00825	.53771	.31322	1.71672
	GRADIENT	.00170	.01435	-.00180	.00222	.00013	-.00061	.00099	.01330	-.00199	.18801

0A105 CFMT109 MODEL 32-0 (O)N51

YAN

(ZH235N) ( 94 MAY 74 )

### REFERENCE DATA

```

XREF = 2690.0000 SQ.FT.  XMRP = 1076.6700 IN. XO
LREF = 474.8100 IN.  YMRP = .0000 IN. YO
BREF = 936.6000 IN.  ZMRP = 375.0000 IN. ZO
SCALE = .9100

```

## PARAMETRIC DATA

ALPHA =	25.000	Q (PSF) =	150.000
ELEVON =	.000	AILRON =	.000
BDFLAP =	.000	SFDBRK =	55.000
RUDDER =	.000		

RUN NO. 50/0 RN/L = 1.01 GRADIENT INTERVAL = -5.00/ 5.00

[illegible]

0A105 CFHT109 MODEL 32-0 (O)N49N50 PITCH DOWN

(ZH236N) ( 04 MAY 74 )

## REFERENCE DATA

```

SREF = 2690.0000 SQ.FT.   XMRP = 1076.6700 IN. XO
LREF = 474.8100 IN.       YMRP = .0000 IN. YO
BREF = 936.6800 IN.       ZMRP = 375.0000 IN. ZO
SCALE = .0100

```

## PARAMETRIC DATA

ALPHA =	25.000	Q (FSF) =	150.000
ELEVON =	.000	AILRON =	.000
BDFLAP =	.000	SPDBRK =	55.000
RUDDER =	.000		

RUN NO. 49/ D RN/L = 1.02 GRADIENT INTERVAL = -5.00/ 5.00

[illegible]

0A105 CFHT109 MODEL 32-0 (O)N49N50 PITCH DOWN

(ZH237H) ( 04 MAY 74 )

## REFERENCE DATA

```

BREF = 2690.0000 34.FT.  XMRP = 1076.6700 IN. XO
LREF = 474.8100 IN.  YMRP = .0000 IN. YO
BREF = 936.6600 IN.  ZMRP = 375.0000 IN. ZO
SCALE = .0100

```

### PARAMETRIC DATA

ALPHA =	25.000	Q (PSF) =	75.000
ELEVON =	.000	AIRLON =	.000
BDCLAP =	.000	SPDBRK =	55.000
RUDDER =	.000		

RUN NO. 48/ 0 RN/L = .51 GRADIENT INTERVAL = -5.00/ 5.00

[illegible]

OA105 CFHT109 MODEL 32-0 (O)N51 YAW

(ZH238N) ( 04 MAY 74 )

### REFERENCE DATA

```

BREF = 2690.0000 30.FT.  XMRP = 1076.6700 IN. XO
LREF = 474.8100 IN.  YMRP = .0000 IN. YO
BREF = 936.6800 IN.  ZMRP = 375.0000 IN. ZO
SCALE = .0100

```

### PARAMETRIC DATA

ALPHA =	25.000	Q (PSF) =	75.000
ELEVON =	.000	AILRON =	.000
BDFLAP =	.000	SFDBRK =	55.000
RUDDER =	.000		

RUN NO. 47/ 0 RN/L = .51 GRADIENT INTERVAL = -5.00/ 5.00

[illegible]

0A-85 CFHT101 MODEL 32-0 01 N49 N50 RCS OFF

(ZQ101F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2890.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = .000 ELEVON = 15.000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = .000

RUN NO. 66/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	-10.358	-.19259	.11623	-.04850	.00042	-.00007	-.00515
10.330	-5.182	-.12160	.09908	-.03860	.00010	-.00039	-.00452
10.330	-.258	-.04868	.08033	-.03745	.00002	-.00029	-.00397
10.330	4.885	.03733	.07471	-.03542	-.00003	-.00044	-.00322
10.330	10.037	.15848	.07250	-.04227	-.00031	-.00060	-.00342
10.330	15.235	.31635	.07464	-.05688	-.00049	-.00064	-.00386
10.330	19.945	.49215	.08046	-.07113	-.00062	-.00074	-.00494
10.330	25.203	.72603	.08896	-.09129	-.00088	-.00058	-.00658
10.330	30.410	.95981	.09518	-.11408	-.00102	-.00040	-.00752
10.330	35.559	1.21688	.10227	-.14234	-.00119	-.00042	-.00911
	GRADIENT	.01672	-.00109	.00039	-.00001	-.00003	.00015

0A-85 CFHT101 MODEL 32-0 01 N51

RCS OFF

(ZQ102F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2890.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = .000 ELEVON = -20.000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = .000

RUN NO. 25/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	-10.368	-.23493	.12691	-.02253	.00086	-.00023	-.00540
10.330	-5.340	-.15610	.10661	-.01915	.00040	-.00049	-.00395
10.330	-.235	-.06939	.08386	-.02317	.00025	-.00044	-.00340
10.330	4.911	.01420	.07447	-.01535	.00012	-.00058	-.00239
10.330	10.055	.11483	.06782	-.00743	.00005	-.00082	-.00248
10.330	15.145	.24681	.06425	-.00115	-.00010	-.00099	-.00257
10.330	20.351	.41422	.06476	.00678	-.00020	-.00115	-.00302
10.330	25.448	.60285	.06551	.01224	-.00034	-.00114	-.00343
10.330	30.664	.82143	.06529	.01238	-.00062	-.00104	-.00392
10.330	35.742	1.05891	.06430	.00664	-.00084	-.00114	-.00462
	GRADIENT	.01624	-.00182	.00152	-.00003	-.00003	.00020

OA-85 CFHT101 MODEL 32-0 01 N52

RCS OFF

(ZQ103F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6600 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRC3 = .000 ELEVON = .000  
 BDFLAP = .000 RUDFLR = 95.000  
 Q-SIM = .000

RUN NO. 71/ 0 RN/L = .97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	-10.428	-.20085	.11538	-.04091	.00055	-.00045	-.01203
10.330	-5.175	-.12881	.09779	-.03211	.00025	-.00075	-.01048
10.330	-.245	-.05617	.07815	-.03046	.00011	-.00070	-.01009
10.330	4.855	.02196	.07000	-.02152	.00005	-.00082	-.00933
10.330	10.033	.12287	.06477	-.01607	-.00004	-.00105	-.00971
10.330	15.086	.25636	.06234	-.01470	-.00017	-.00116	-.01011
10.330	20.285	.43143	.06252	-.01441	-.00028	-.00133	-.01088
10.330	25.446	.62755	.06321	-.01810	-.00048	-.00127	-.01243
10.330	30.616	.85611	.06357	-.02915	-.00066	-.00113	-.01339
10.330	35.710	1.09233	.06314	-.04610	-.00086	-.00121	-.01481
	GRADIENT	.01532	-.00160	.00175	-.00001	-.00002	.00015

OA-85 CFHT101 MODEL 32-0 01 N61

RCS OFF

(ZQ104F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6600 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 100.000  
 PCRC3 = .000 ELEVON = 15.000  
 BDFLAP = 13.750 RUDFLR = 55.000  
 Q-SIM = .000

RUN NO. 55/ 0 RN/L = .67 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.300	14.983	.31205	.07858	-.06421	-.00038	-.00048	-.00374
10.300	20.028	.59272	.08606	-.08443	-.00052	-.00053	-.00447
10.300	25.173	.72233	.09518	-.10792	-.00075	-.00038	-.00579
10.300	30.232	.95829	.10444	-.13543	-.00082	-.00030	-.00668
10.300	35.435	1.22026	.11412	-.16694	-.00096	-.00023	-.00774
	GRADIENT	.04446	.00175	-.00502	-.00003	.00001	-.00020

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TABULATED SOURCE DATA - OA105

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OA-85 CFHT101 MODEL 32-0 01 N43 N44 RCS OFF

(ZQ105F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 100.000  
 PCRC5 = .000 ELEVON = .000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = .000

RUN NO. 37/ 0 RN/L = .66 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.300	15.118	.26395	.06446	-.01592	-.00005	-.00105	-.01006
10.300	20.239	.43410	.06532	-.01549	-.00016	-.00117	-.01124
10.300	25.209	.62652	.06597	-.01892	-.00034	-.00113	-.01226
10.300	30.461	.85706	.06741	-.02947	-.00041	-.00108	-.01326
10.300	35.638	1.10047	.06704	-.04565	-.00055	-.00110	-.01453
	GRADIENT	.04091	.00014	-.00144	-.00002	-.00000	-.00021

OA-85 CFHT101 MODEL 32-0 01 N43 N60 RCS OFF

(ZQ106F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 100.000  
 PCRC5 = .000 ELEVON = -20.000  
 BDFLAP = -14.250 RUDFLR = 55.000  
 Q-SIM = .000

RUN NO. 14/ 0 RN/L = .63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.300	14.942	.23835	.06606	-.00019	-.00003	-.00060	-.00264
10.300	20.222	.39416	.06550	.00941	-.00011	-.00072	-.00327
10.300	25.433	.57910	.06688	.01795	-.00024	-.00069	-.00431
10.300	30.375	.77118	.06705	.02220	-.00020	-.00074	-.00467
10.300	35.506	.99310	.06638	.02271	-.00039	-.00077	-.00538
	GRADIENT	.03676	.00004	.00115	-.00002	-.00001	-.00013

OA-85 CFHT101 MODEL 32-0 01 N46 N47 RCS OFF

(ZQ107F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = .000 ELEVON = -20.000  
 BDFLAP = -14.250 RUDFLR = 55.000  
 Q-SIM = .000

RUN NO. 19/ 0 RN/L = .96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	15.204	.24385	.06167	.00123	-.00005	-.00078	-.00173
10.330	20.315	.40883	.06236	.01114	-.00016	-.00102	-.00258
10.330	25.471	.59038	.06258	.01908	-.00032	-.00104	-.00282
10.330	30.559	.80301	.06304	.02301	-.00057	-.00096	-.00351
10.330	35.795	1.03191	.06170	.02183	-.00081	-.00112	-.00422
	GRADIENT	.03832	.00001	.00103	-.00004	-.00001	-.00011

OA-85 CFHT101 MODEL 32-0 01 N46 N47 RCS OFF

(ZQ108F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = .000 ELEVON = .000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = .000

RUN NO. 42/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	15.085	.26104	.06214	-.01495	-.00011	-.00081	-.00254
10.330	20.333	.43830	.06247	-.01430	-.00026	-.00103	-.00328
10.330	25.569	.64094	.06323	-.01861	-.00042	-.00098	-.00441
10.330	30.394	.85088	.06328	-.02898	-.00062	-.00089	-.00508
10.330	35.600	1.10735	.06391	-.04742	-.00081	-.00094	-.00628
	GRADIENT	.04118	.00009	-.00155	-.00003	-.00000	-.00018



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TABULATED SOURCE DATA - OA193

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OA-85 CFHT101 MODEL 32-0 01 N46 N47 RCS OFF

(ZQ109F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = .000 ELEVON = 15.000  
 BDFLAP = 13.750 RUDFLR = 55.000  
 Q-SIM = .000

RUN NO. 59/ 0 RN/L = .97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLW	CBL	CYN	CY
10.330	15.026	.31808	.07522	-.06500	-.00045	-.00057	-.00312
10.330	20.211	.51099	.08279	-.08541	-.00058	-.00064	-.00402
10.330	25.217	.72610	.09142	-.10908	-.00077	-.00050	-.00532
10.330	30.385	.97190	.10088	-.13843	-.00092	-.00035	-.00638
10.330	35.433	1.22466	.11002	-.17075	-.00111	-.00035	-.00756
	GRADIENT	.04460	.00172	-.00519	-.00003	.00001	-.00022

OA-85 CFHT101 MODEL 32-0 02 N43 N60 RCS OFF

(ZQ110F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 100.000  
 PCRCs = .000 ELEVON = 15.000  
 BDFLAP = 13.750 RUDFLR = 55.000  
 Q-SIM = .000

RUN NO. 50/ 0 RN/L = .63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLW	CBL	CYN	CY
10.300	14.884	.30779	.06328	-.06353	-.00040	-.00049	-.00477
10.300	20.217	.50552	.07092	-.08421	-.00052	-.00048	-.00584
10.300	24.941	.70749	.07899	-.10548	-.00064	-.00042	-.00697
10.300	30.221	.95119	.08865	-.13334	-.00071	-.00029	-.00810
10.300	35.464	1.21212	.09805	-.16456	-.00077	-.00021	-.00963
	GRADIENT	.04407	.00171	-.00491	-.00002	.00001	-.00023

0A-85 CFMT101 MODEL 32-0 01 N43 N60 RCS OFF

(Z0111F) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 100.000  
 PCRC5 = .000 ELEVON = 15.000  
 BDFLAP = -14.250 RUOFLR = 55.000  
 Q-SIM = .000

RUN NO. 75/ 0 RN/L = .63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.300	15.012	.30252	.07663	-.05373	-.00027	-.00048	-.00254
10.300	20.114	.49413	.08351	-.06771	-.00040	-.00057	-.00334
10.300	25.346	.70460	.09051	-.08303	-.00054	-.00054	-.00430
10.300	30.162	.92124	.09702	-.10028	-.00063	-.00049	-.00492
10.300	35.314	1.18011	.10476	-.12256	-.00077	-.00045	-.00629
	GRADIENT	.04307	.00138	-.00336	-.00002	.00000	-.00018

0A-85 CFMT101 MODEL 32-0 01N49N50 PITCH DOWN

(Z0101N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC5 = 167.000 ELEVON = 15.000  
 BDFLAP = .000 RUOFLR = 55.000  
 Q-SIM = 20.000

RUN NO. 67/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	-10.399	-.20194	.10096	-.02937	-.00004	-.00011	-.00487
10.330	-5.243	-.14104	.07942	-.01691	-.00034	-.00057	-.00168
10.330	-.032	-.07099	.06404	-.01224	-.00081	-.00001	-.00215
10.330	4.984	.00254	.05549	-.00555	-.00061	-.00047	-.00116
10.330	9.994	.11353	.05304	-.00810	-.00070	-.00058	-.00148
10.330	15.260	.26608	.05344	-.02263	-.00116	-.00021	-.00304
10.330	20.253	.45268	.05987	-.03789	-.00129	-.00048	-.00341
10.330	25.259	.67260	.06781	-.05586	-.00141	-.00063	-.00430
10.330	30.412	.90403	.07440	-.07789	-.00147	-.00054	-.00534
10.330	35.545	1.15966	.08081	-.10508	-.00160	-.00057	-.00656
	GRADIENT	.01460	-.00170	.00133	.00004	-.00009	.00020

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TABULATED SOURCE DATA - OA105

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OA-85 CFHT101 MODEL 32-0 D1N49N52 ROLL

(ZQ102N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = 158.000 ELEVON = 15.000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = 20.000

RUN NO. 68/ 0 RN/L = 1.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CA	CLM	CBL	CYN	CY
10.330	-10.458	-.20556	.10785	-.03664	-.00332	.00338	-.01209
10.330	-5.284	-.14198	.09256	-.02053	-.00787	.00961	-.01941
10.330	-.197	-.07420	.07497	-.02257	-.00869	.00962	-.02084
10.330	4.855	.00390	.06415	-.02027	-.00883	.00757	-.01665
10.330	10.029	.12661	.06000	-.02806	-.00733	.00266	-.00418
10.330	15.153	.28227	.06316	-.04189	-.00620	.00019	.00068
10.330	20.373	.48055	.07056	-.05707	-.00665	.00044	-.00075
10.330	25.297	.69324	.07795	-.07357	-.00734	.00128	-.00360
10.330	30.351	.93927	.08555	-.09738	-.00707	.00055	-.00318
10.330	35.562	1.19249	.09254	-.12563	-.00715	.00008	-.00368
	GRADIENT	.01546	-.00214	.00046	-.00003	-.00041	.00083

OA-85 CFHT101 MODEL 32-0 D1N51

YAW

(ZQ103N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRCs = 179.000 ELEVON = 15.000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = 20.000

RUN NO. 65/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CA	CLM	CBL	CYN	CY
10.330	-10.409	-.19297	.11442	-.04745	.00043	-.00189	-.00182
10.330	-5.136	-.12606	.09411	-.03761	-.00109	-.00200	.00814
10.330	-.219	-.05278	.07948	-.03702	-.00041	-.00321	.00505
10.330	4.925	.03071	.07058	-.03200	-.00104	-.00353	.00590
10.330	10.009	.13754	.06696	-.03761	-.00264	-.00310	.00722
10.330	15.064	.29165	.06988	-.04995	-.00347	-.00216	.00521
10.330	20.281	.48886	.07660	-.06402	-.00470	-.00152	.00348
10.330	25.439	.70474	.08403	-.08261	-.00569	-.00113	.00267
10.330	30.286	.93077	.09170	-.10498	-.00573	-.00127	.00207
10.330	35.495	1.19202	.09887	-.13304	-.00617	-.00136	.00070
	GRADIENT	.01623	-.00173	.00098	-.00012	-.00006	.00017

0A-85 CFHT101 MODEL 32-0 01N91

YAW

(ZQ104N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRC5 = 179.000 ELEVON = -20.000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = 20.000

RUN NO. 26/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	-10.357	-.23358	.12211	-.02196	.00097	-.00196	-.00073
10.330	-5.326	-.16116	.09952	-.01948	-.00033	-.00244	.01121
10.330	-.197	-.07329	.07997	-.02265	.00088	-.00378	.00727
10.330	4.984	.00801	.06822	-.01402	.00059	-.00396	.00742
10.330	10.225	.10459	.05947	-.00669	-.00070	-.00373	.00908
10.330	15.110	.23085	.05798	.00158	-.00169	-.00283	.00752
10.330	20.417	.40025	.05906	.01164	-.00320	-.00201	.00633
10.330	25.439	.58627	.06083	.01803	-.00443	-.00220	.00645
10.330	30.597	.80749	.06130	.01816	-.00462	-.00227	.00673
10.330	35.728	1.03685	.06144	.01499	-.00680	-.00311	.00622
	GRADIENT	.01569	-.00227	.00167	-.00006	-.00003	.00003

0A-85 CFHT101 MODEL 32-0 01N49N52 ROLL

(ZQ105N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q (PSF) = 150.000  
 PCRC5 = 158.000 ELEVON = -20.000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = 20.000

RUN NO. 27/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	-10.473	-.24712	.11449	-.00970	-.00295	.00420	-.01327
10.330	-5.085	-.16591	.09499	-.00345	-.00704	.00983	-.01939
10.330	-.186	-.09567	.07513	-.01240	-.00731	.01047	-.02293
10.330	4.925	-.01902	.06200	-.00459	-.00658	.00720	-.01632
10.330	10.206	.09127	.05301	.00093	-.00467	.00220	-.00431
10.330	15.015	.21806	.05100	.00723	-.00398	-.00031	.00198
10.330	20.329	.38714	.05253	.01717	-.00469	-.00064	.00194
10.330	25.483	.58593	.05421	.02505	-.00573	.00038	-.00075
10.330	30.689	.79313	.05373	.02723	-.00541	-.00089	.00095
10.330	35.839	1.02393	.05251	.02377	-.00601	-.00138	.00074
	GRADIENT	.01500	-.00257	.00153	.00014	-.00064	.00129

DATE 19 JUN 74

TABULATED SOURCE DATA - OA105

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OA-85 CFHT101 MODEL 32-0 D1N52 PITCH UP

(ZQ106N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = 158.000 ELEVON = -20.000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = 20.000

RUN NO. 29/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	-10.374	-.23909	.12346	-.01794	-.00211	.00741	-.01954
10.330	-5.206	-.16182	.10606	-.01017	-.00590	.01276	-.02882
10.330	-.267	-.08182	.08322	-.01855	-.00683	.01350	-.02652
10.330	4.885	-.00484	.07159	-.01218	-.00621	.01122	-.02282
10.330	10.060	.10242	.06248	-.00780	-.00353	.00525	-.01220
10.330	15.141	.24053	.06120	-.00319	-.00113	.00138	-.00541
10.330	20.313	.41174	.06302	.00630	-.00153	.00169	-.00686
10.330	25.651	.60720	.06349	.01307	-.00224	.00260	-.00932
10.330	30.510	.81101	.06331	.01282	-.00162	.00136	-.00714
10.330	35.762	1.04926	.06233	.00803	-.00175	.00120	-.00769
	GRADIENT	.01494	-.00226	.00124	.00012	-.00044	.00111

OA-85 CFHT101 MODEL 32-0 D1N52 PITCH UP

(ZQ107N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRCs = 158.000 ELEVON = .000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = 20.000

RUN NO. 72/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	-10.389	-.20623	.11192	-.03626	-.00230	.00737	-.02010
10.330	-5.120	-.13709	.09868	-.02247	-.00588	.01275	-.02922
10.330	-.195	-.06701	.07829	-.02400	-.00661	.01308	-.02953
10.330	4.901	.00733	.06811	-.01901	-.00625	.01126	-.02435
10.330	10.063	.10590	.05748	-.01385	-.00287	.00549	-.01430
10.330	15.074	.24892	.05895	-.01665	-.00121	.00152	-.00731
10.330	20.306	.42527	.06088	-.01501	-.00164	.00173	-.00928
10.330	25.588	.62660	.06147	-.01774	-.00240	.00271	-.01237
10.330	30.497	.84225	.06193	-.02835	-.00190	.00160	-.01090
10.330	35.642	1.08494	.06200	-.04495	-.00191	.00134	-.01208
	GRADIENT	.01459	-.00200	.00098	.00007	-.00036	.00102

## OA-85 CFHT101 MODEL 32-0 01N49N52 ROLL

(24108N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC\$ = 158.000 ELEVON = .000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = 20.000

RUN NO. 70/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	-10.403	-.21198	.10369	-.02489	-.00386	.00348	-.01504
10.330	-5.154	-.14385	.08962	-.01288	-.00766	.00904	-.02217
10.330	-.190	-.08406	.07151	-.01509	-.00855	.00980	-.02536
10.330	4.955	-.01081	.06000	-.00660	-.00814	.00696	-.01924
10.330	10.032	.08965	.05193	-.00354	-.00626	.00213	-.00748
10.330	15.074	.22642	.05125	-.00099	-.00572	-.00043	-.00210
10.330	20.350	.39892	.05237	.00053	-.00604	-.00038	-.00322
10.330	25.389	.58882	.05297	-.00158	-.00661	.00018	-.00553
10.330	30.540	.80815	.05348	-.01114	-.00619	-.00054	-.00514
10.330	35.670	1.04652	.05361	-.02808	-.00647	-.00107	-.00576
	GRADIENT	.01424	-.00224	.00165	.00008	-.00055	.00119

## OA-85 CFHT101 MODEL 32-0 01N49N50 PITCH DOWN

(24109N) ( 04 MAY 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.6700 IN. XO  
 LREF = 474.8100 IN. YMRP = .0000 IN. YO  
 BREF = 936.6800 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100 IN

## PARAMETRIC DATA

BETA = .000 Q(PSF) = 150.000  
 PCRC\$ = 167.000 ELEVON = .000  
 BDFLAP = .000 RUDFLR = 55.000  
 Q-SIM = 20.000

RUN NO. 73/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CN	CA	CLM	CBL	CYN	CY
10.330	-10.362	-.22169	.09808	-.01768	.00069	.00009	-.00716
10.330	-5.287	-.15143	.07909	-.01153	.00024	-.00092	-.00372
10.330	-.149	-.08719	.06367	-.00465	-.00008	-.00070	-.00211
10.330	4.993	-.01326	.05296	.00393	-.00019	-.00059	-.00235
10.330	10.075	.08441	.04608	.01159	-.00078	-.00090	-.00217
10.330	15.156	.21379	.04207	.01435	-.00126	-.00074	-.00317
10.330	20.207	.38380	.04334	.01665	-.00063	-.00094	-.00397
10.330	25.456	.58878	.04413	.01341	-.00079	-.00107	-.00485
10.330	30.640	.80794	.04397	.00325	-.00092	-.00110	-.00584
10.330	35.736	1.05004	.04279	-.01269	-.00122	-.00124	-.00712
	GRADIENT	.01438	-.00208	.00167	-.00002	.00002	-.00005